

Figure 1B

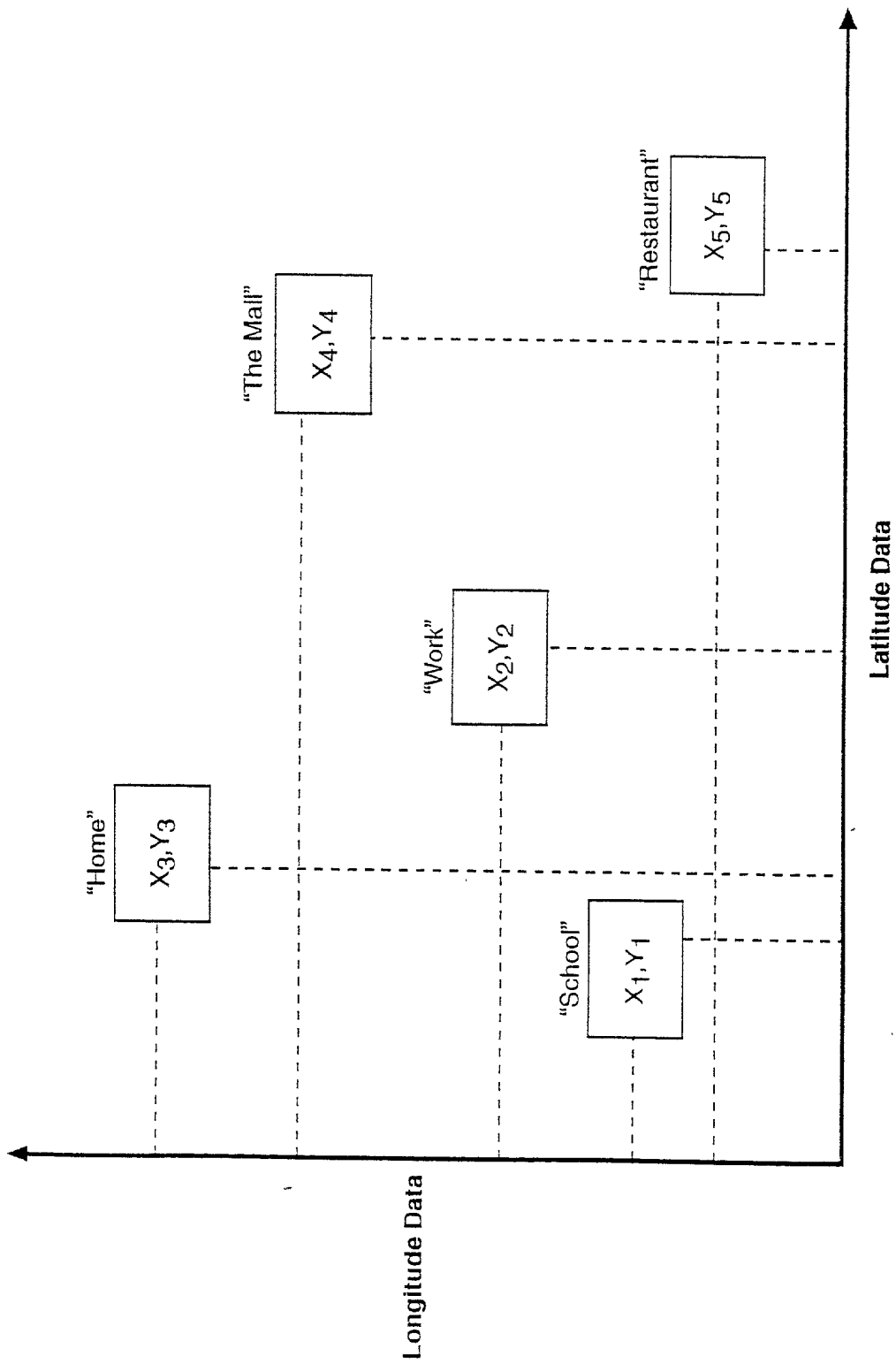
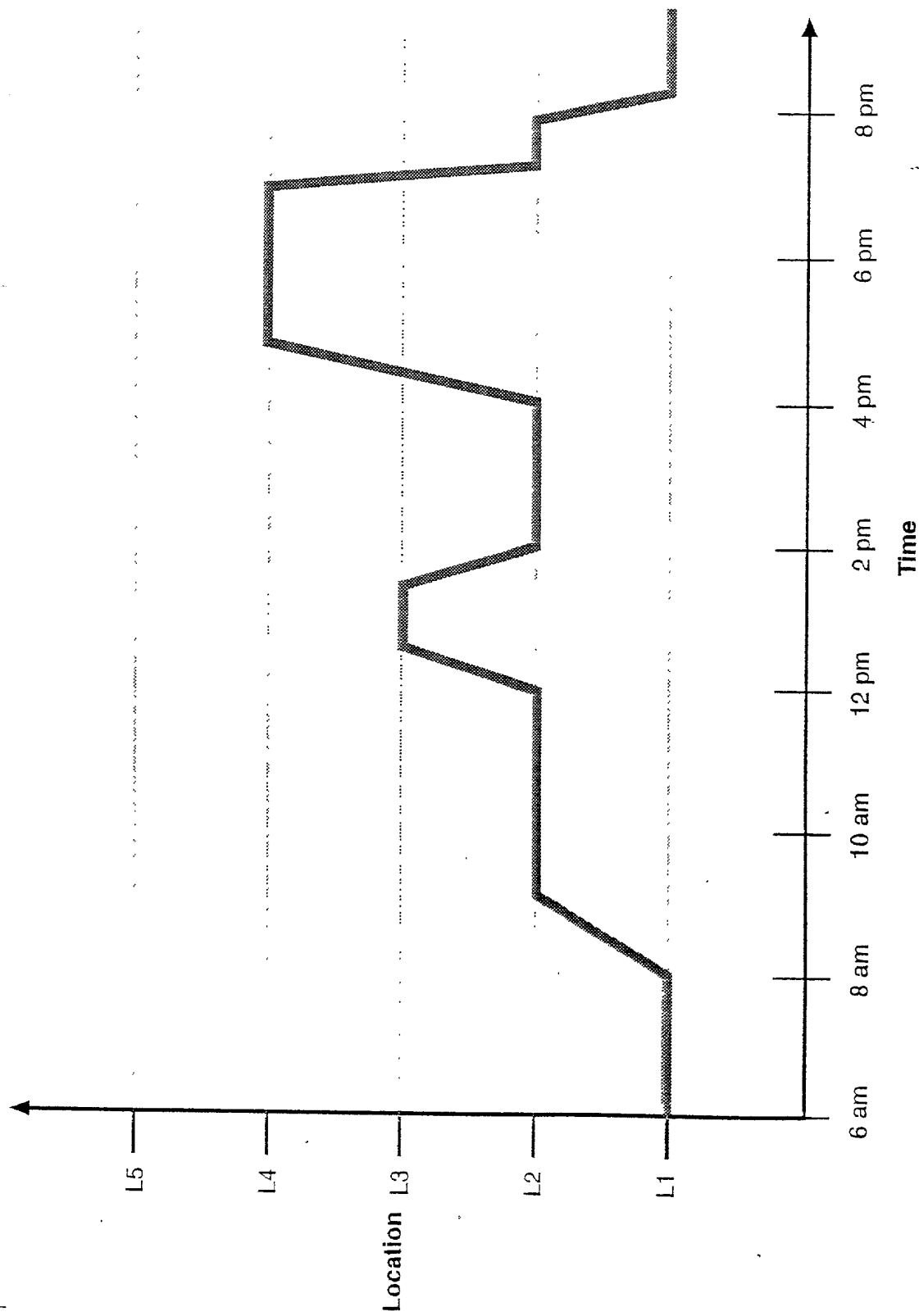
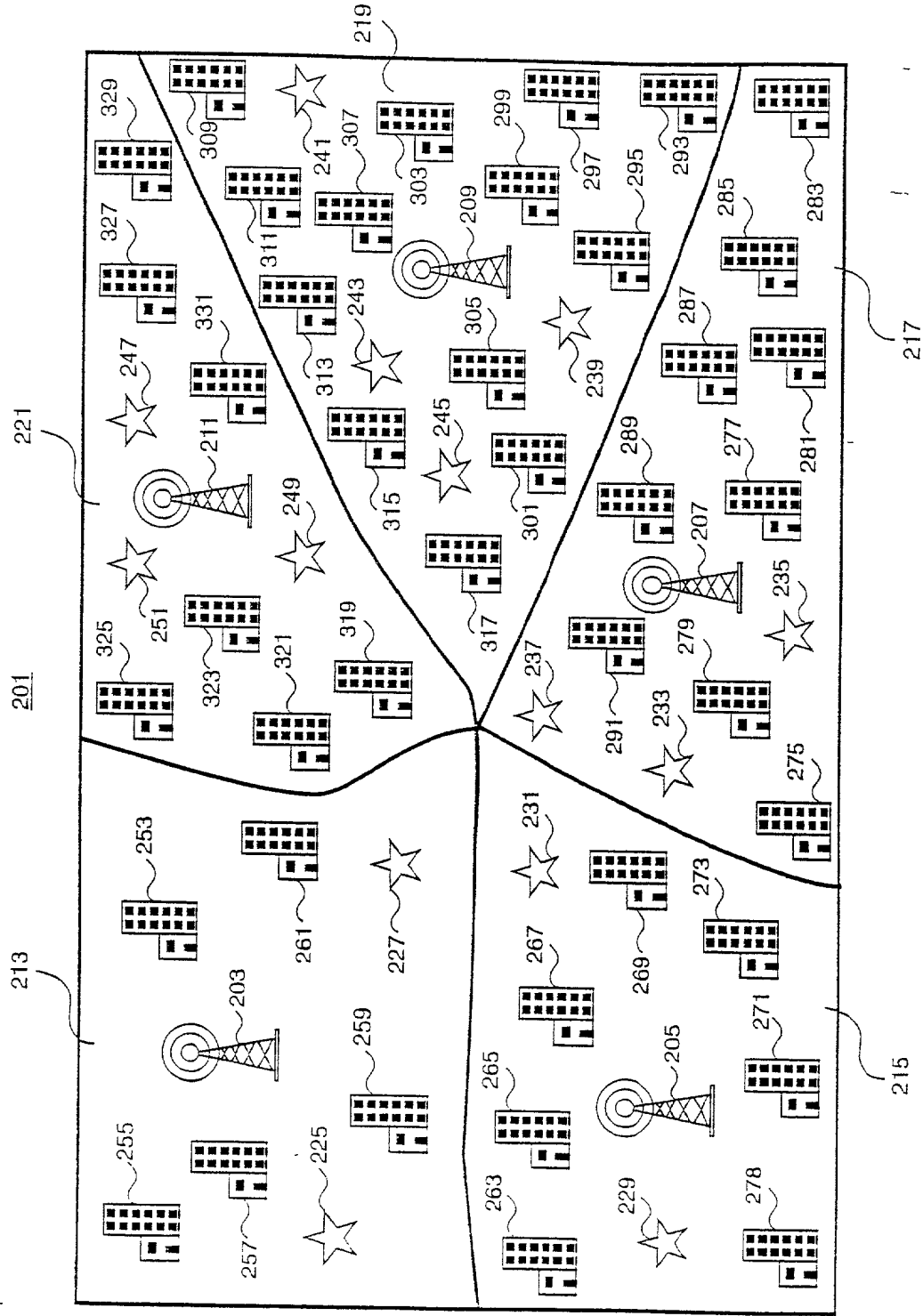


Figure 1C



Biographic Data	Data	Confidence	Correlation
Name	Sue	High	Yes
Gender	Female	High	Yes
Age	13	Medium	Yes
Ethnic Background	Chinese-American	Medium	No
Demographic Data			
Culture	American	Low	No
Region	East Coast	High	Yes
Likely Family Income	High	Low	No
Preferences Data			
Action Movies	High Interest	High	No
Hip-Hop Music	Low Interest	Low	No
Clothing from The GAP	High Interest	High	Yes

Figure 1E



Tower No.	Region	Adjoining Regions	Favorite Places	Network Affiliates
203	213	221	225 Riding Stables	253 Game Arcade
		215	227 Water Park	255 Video Store
				257 Taco Stand
				259 Book Store
				261 Riding Supply Store

Figure 1G (1 of 5)

Tower No.	Region	Adjoining Regions	Favorite Places	Network Affiliates
205	215	213	229 Aunt Jane's House	263 24-Hour Gym
		217	231 Linear Park	265 Ice Skating Rink
		221	233 Pottery Supply Store	267 Sporting Goods Superstore
				269 Promdress Shop
				271 Belgian Chocolate Store
				273 Pet Store
				278 Model Train Store

Figure 1G (2 of 5)



207 217 219 221 215 235 237 275 277 279 281 283 285 287 289 291

Tower No.	Region	Adjoining Regions	Favorite Places	Network Affiliates
207	217	219	235 Candy's House	275 Corn Maze
		221	237 Resale Boutique	277 Aquarium
		215		279 Museum
				281 I-MAX Theatre
				283 Movie Theatre
				285 Laser Tag Facility
				287 Pizza Place
				289 Zoo
				291 Public Library

Figure 1G (3 of 5)

Tower No.	Region	Adjoining Regions	Favorite Places	Network Affiliates
209	219	217	239 Home	293 Mall #1
		221	241 School	295 Mall #2
			243 Work	297 Chinese Food
			245 Suzy's House	299 K-Mart
				301 Target
				303 Record Store
				305 Batting Cages
				307 Golf Driving Range
				309 Computer Superstore
				311 Boy's Club
				313 Church #1
				315 Restaurant #14
				317 Bicycle Shop

Figure 1G (4 of 5)

Tower No.	Region	Adjoining Regions	Favorite Places	Network Affiliates
211	221	219	247 Uncle Clay's House	319 Metro Stop
		217	249 The Gap	321 Starbucks
		215	251 Grand Mother's House	323 Bowling Alley
		213		325 Antique Mall
				327 Tennis Facility
				329 Car Stereo Superstore

Figure 1G (5 of 5)

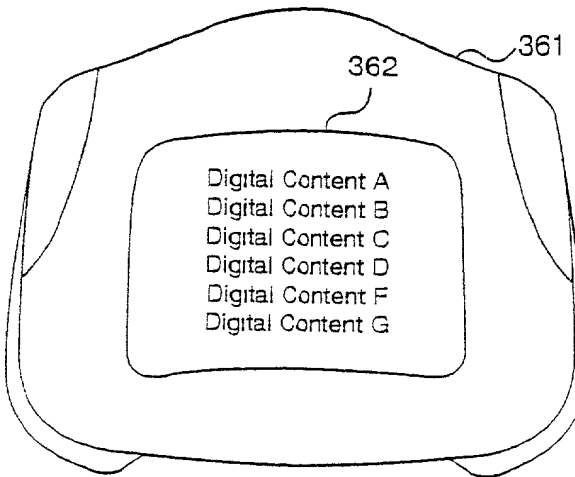
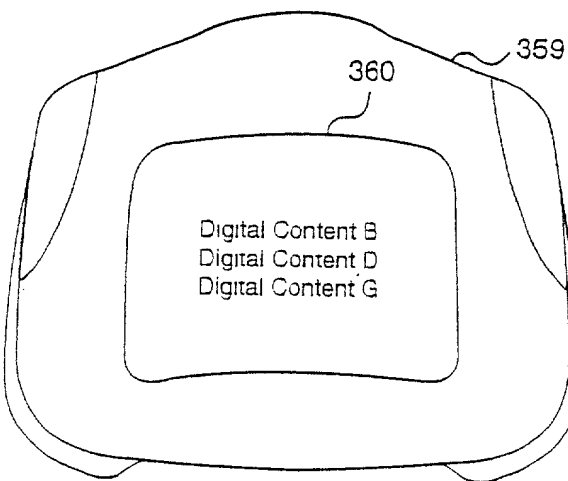
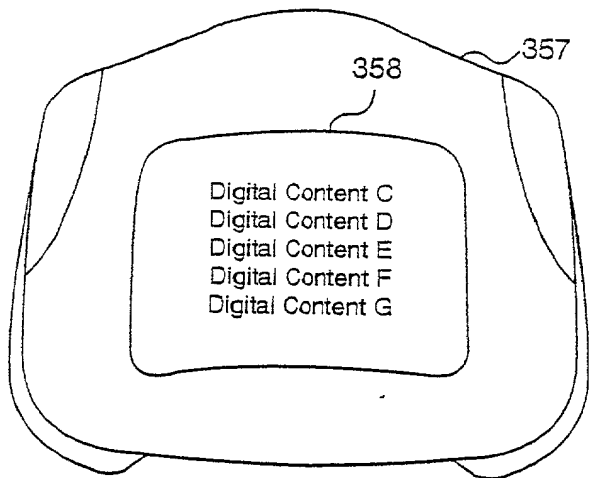
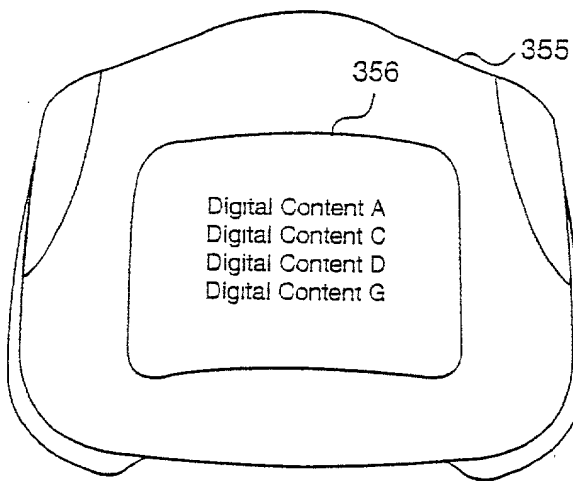
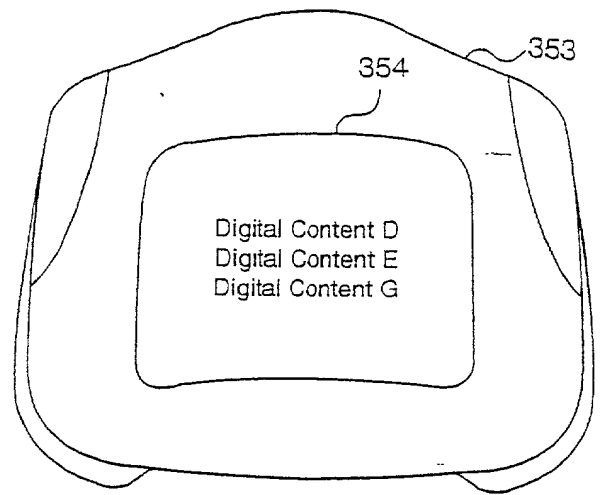
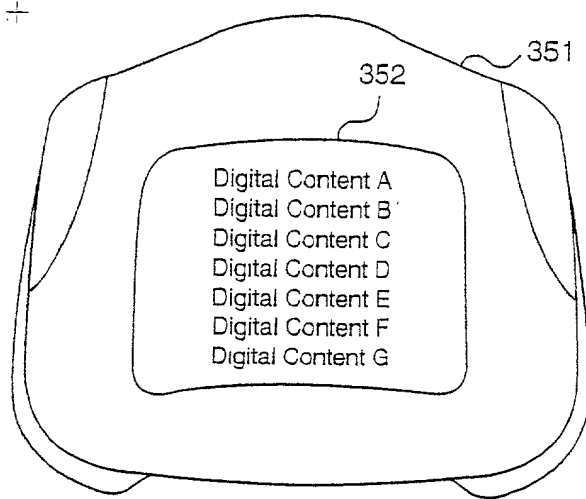


Figure 1H

365	367	369	371	373	375	377	379	381	383
Digital Content ID	Playable Digital Content	Source	Type	Subject	Energy Required to Play (Units)	Energy Earned for Playing (Units)	Preferred Location	Preferred Time	Period
Digital Content A	Movie	Merchant #12	Advertisement	X, Y	0	5	LATLONG1	After School	Incrementally Larger with Location
Digital Content B	Text and Alarm	Government Entity	Warning	Weather	0	0	Various Changing	Immediate	One Time Only
Digital Content C	Graphical Icon	Friend #1	Email Message		2	0	N/A	ASAP	7 Days
Digital Content D	Text Message	Acquaintance #3	Request for Chat		5	0	N/A	ASAP	3 Hours
Digital Content E	Executable Spreadsheet	Merchant #2	Survey	L, M	0	20	LATLONG2	Between 12/1 and 12/25	25 Days
Digital Content F	Text Message	School	Announcement	Sporting Event	1	0	N/A	Between 3:00 pm and 10:00 pm	Incrementally Larger for 7 Days
Digital Content G	Calendar File	Soccer Team	Schedule		3	0	N/A		User Initiated for 2 Days

Figure 11

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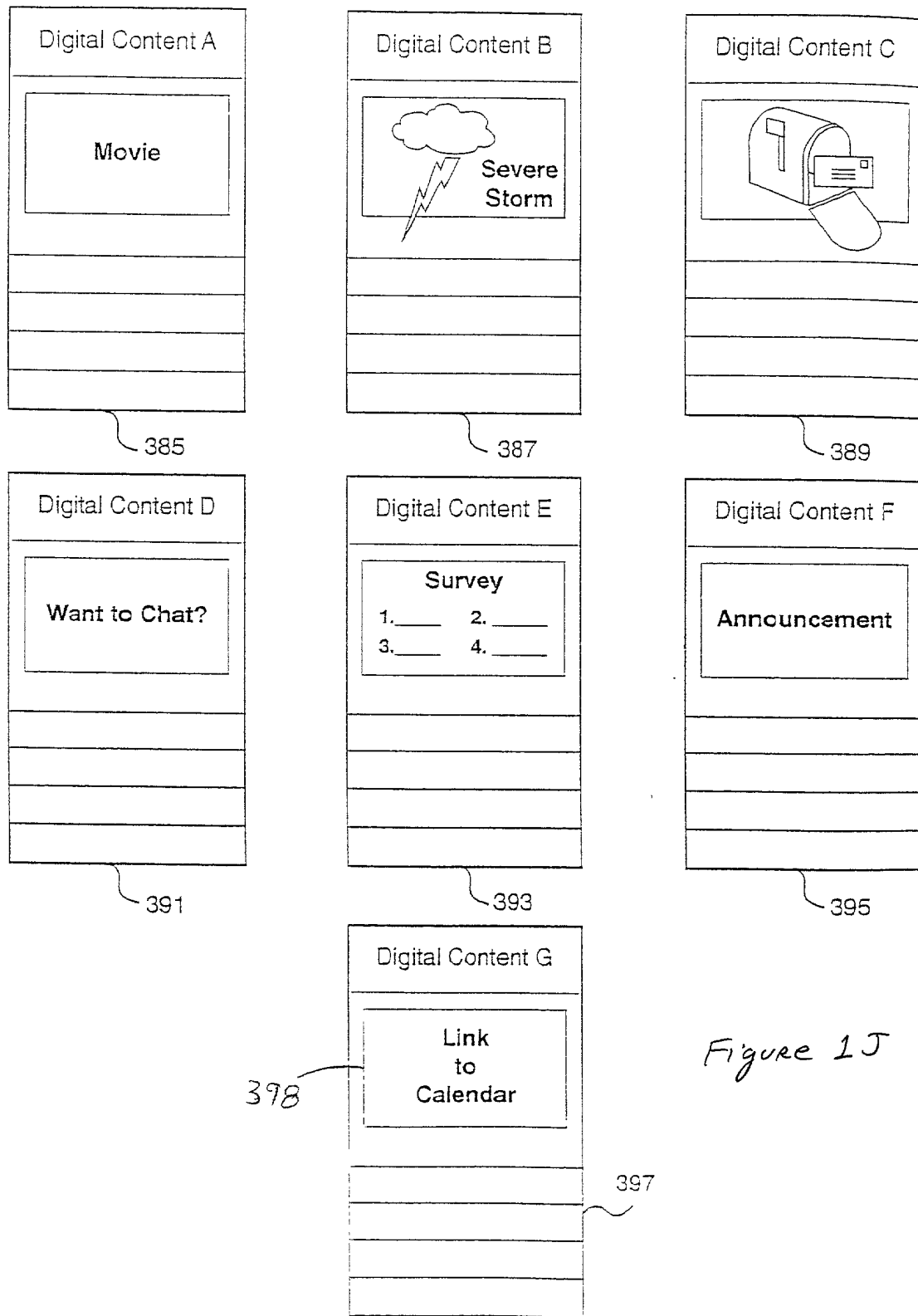


Figure 1J

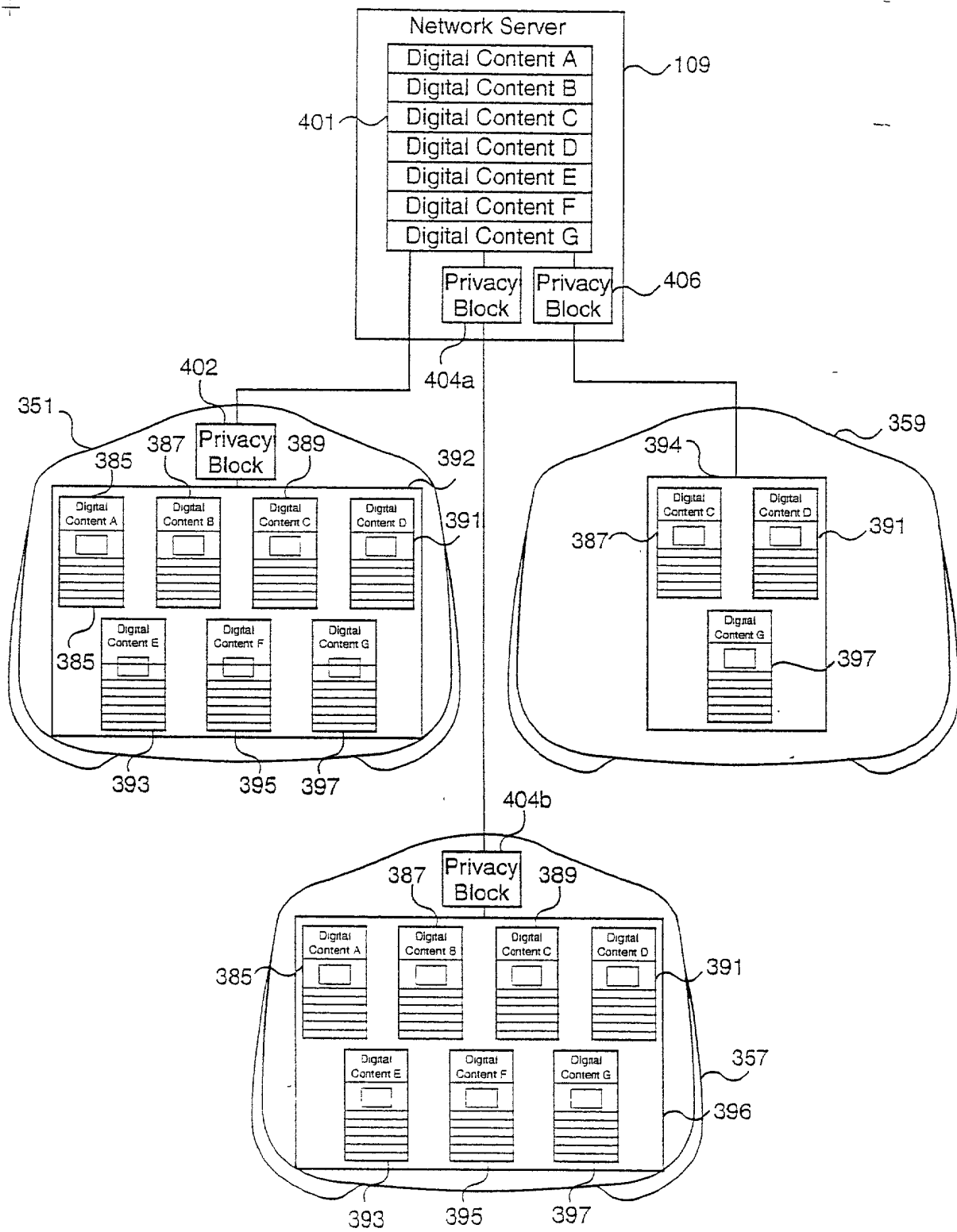


Figure 1K

407

Contextual User Profile													
User/ Appliance	Static Components			Dynamic Data Components									
	423	423b	423c	Hard		Soft		425e		425f		425g	425h
	Biographic	Demographic	Cultural	Latitude Longitude	Time	Date	Available Energy	Food Pref.	Entertainment Preferences	Relationship Preferences	Privacy Block		
409	B1	DM3	C1	LATLONG1	4:00 pm	12/5	130	F1	E1	R3	P1		
411	B3	DM2	C2	LATLONG2	4:30 pm	12/5	43	F2	E3	R2	P2		
413	B2	DM1	C3	LATLONG3	5:00 pm	12/5	62	F3	E2	R1	P3		
415	B1	DM2	C1	LATLONG4	4:00 pm	12/5	227	F3	E1	R1	P4		
417	B3	DM3	C2	LATLONG5	4:30 pm	12/5	39	F2	E3	R2	P5		
419	B1	DM3	C3	LATLONG6	5:00 pm	12/5	200	F1	E2	R3	P6		
421													
423				427a				427b				425	

Figure 1L



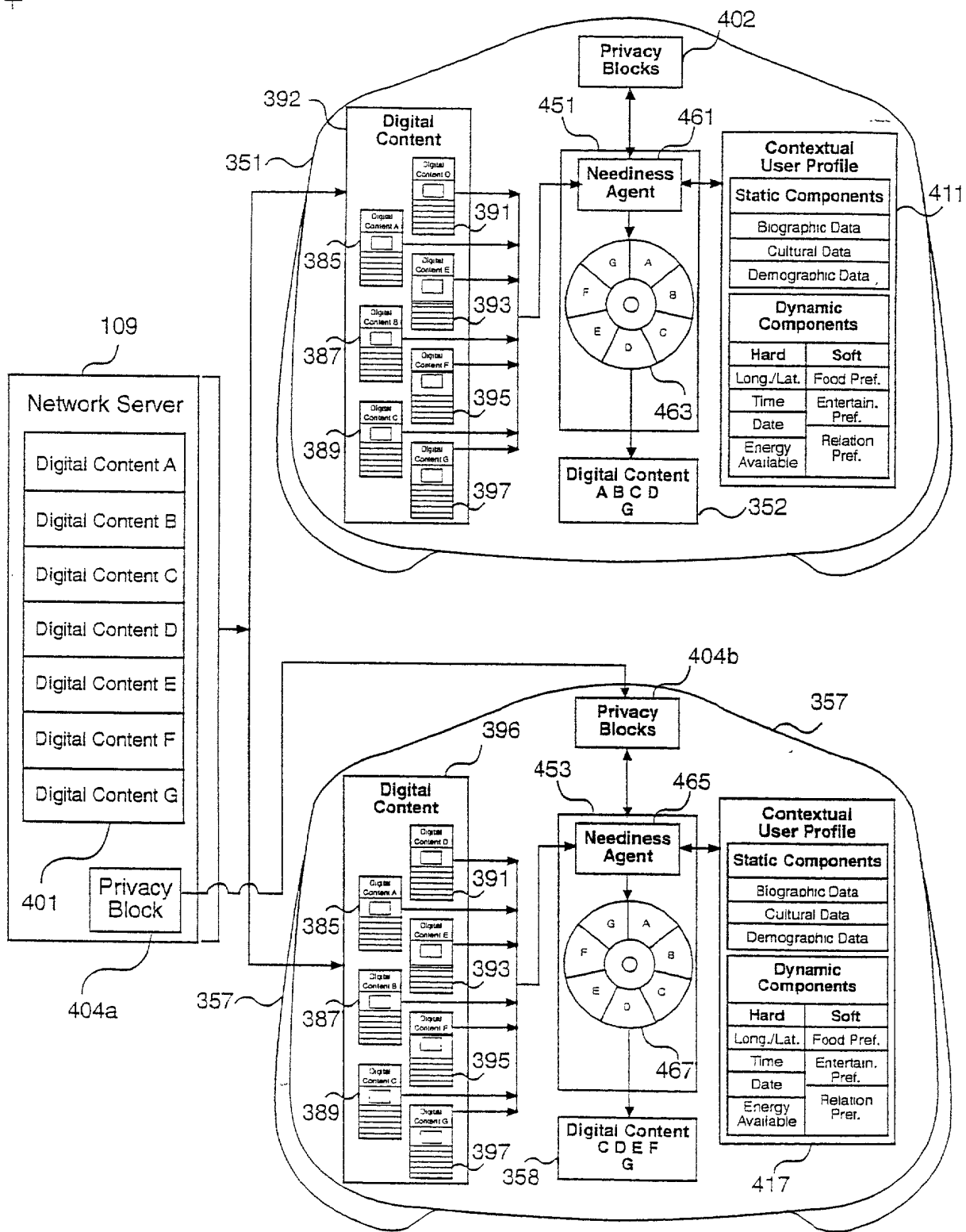


Figure 1M

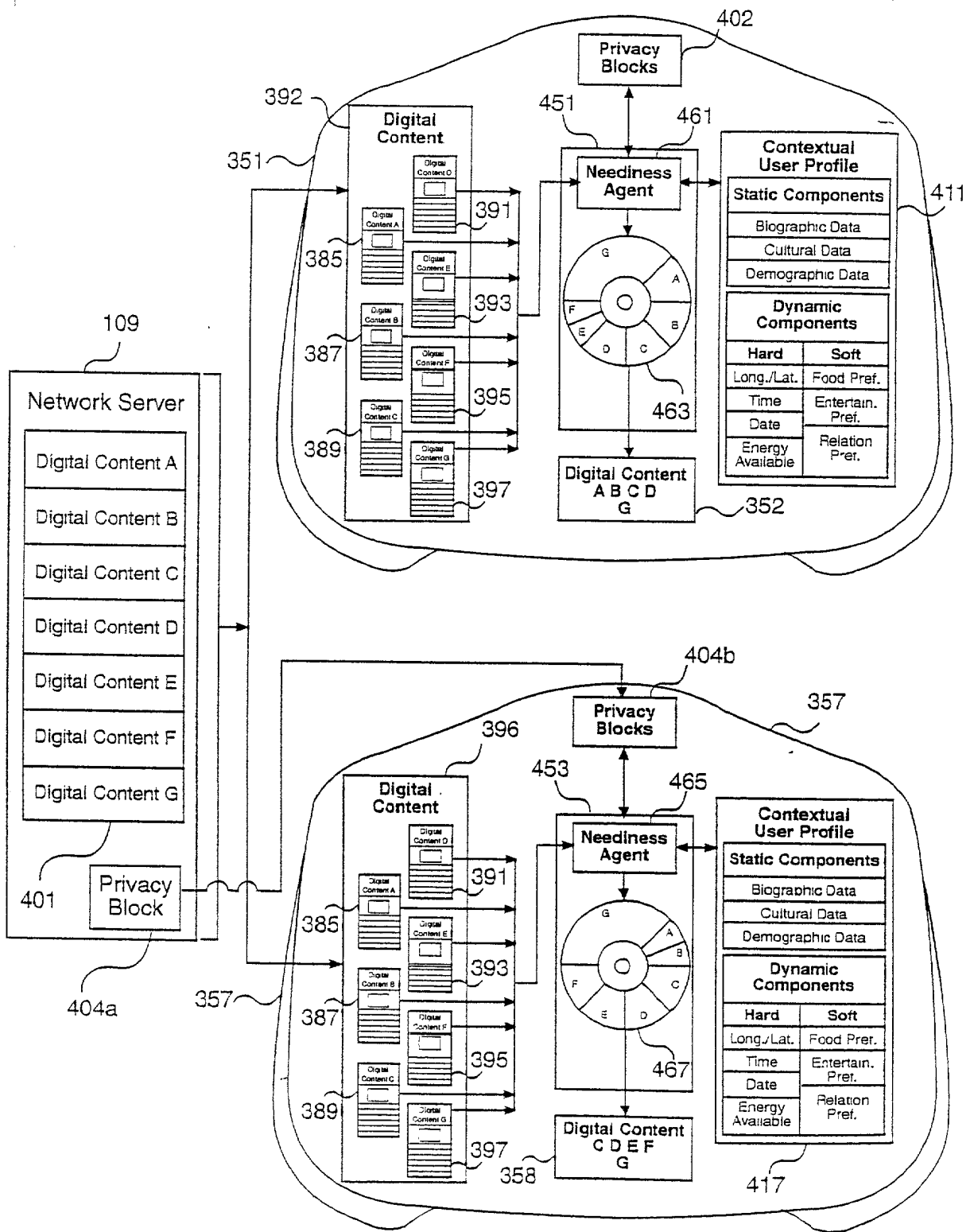


Figure 1N

+

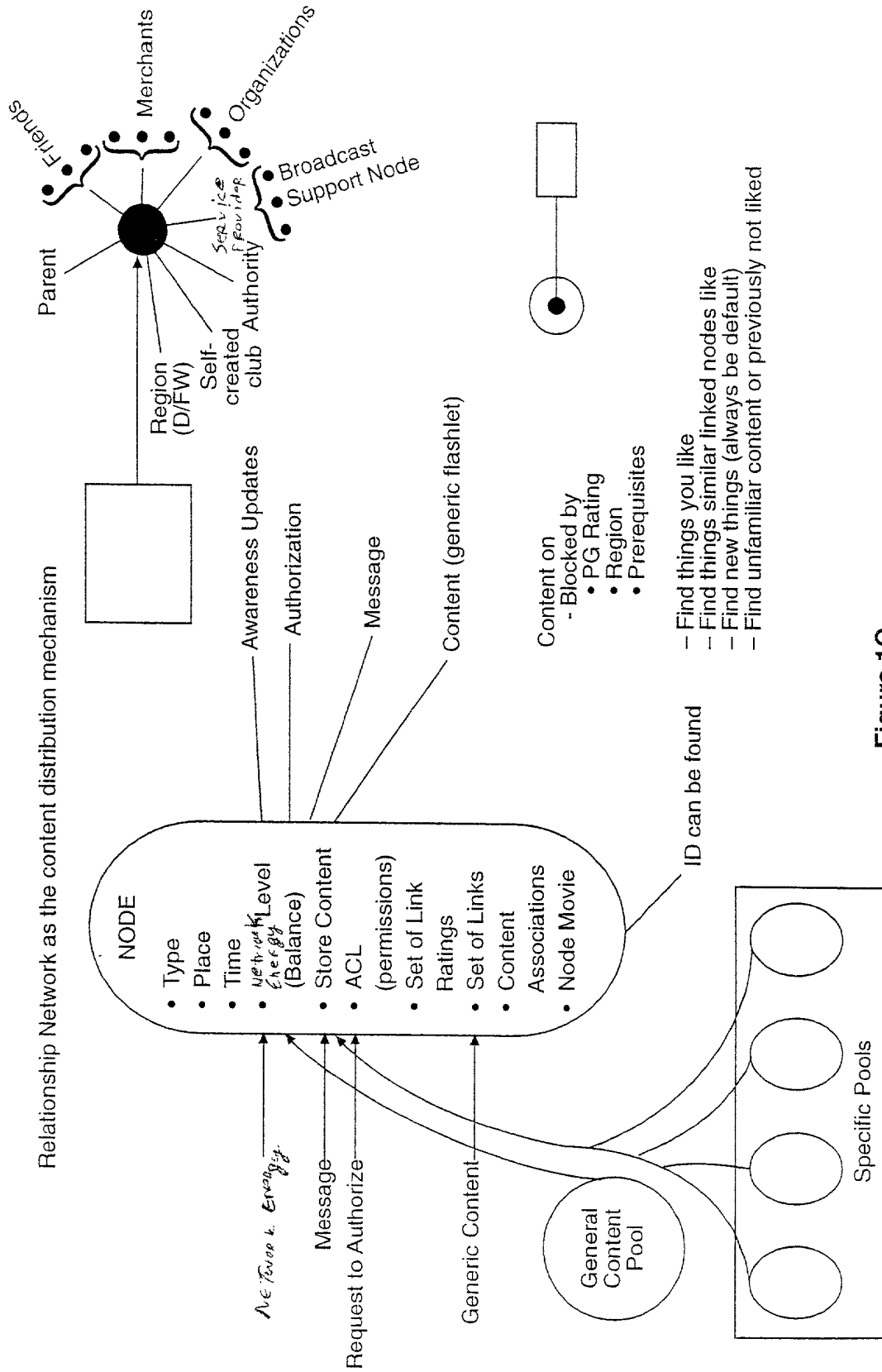


Figure 10

+

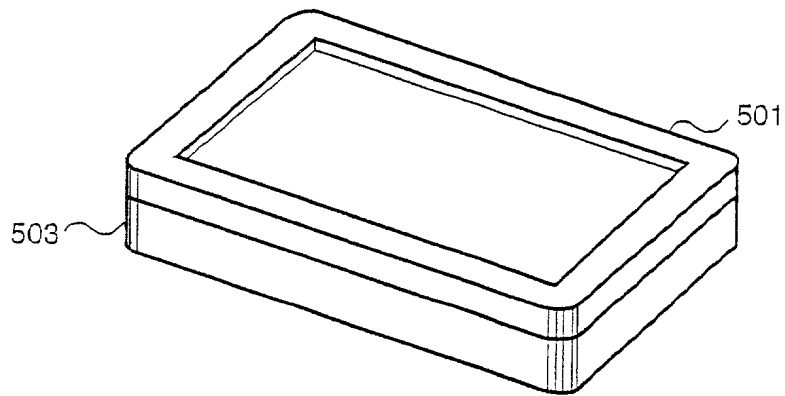


Figure 2A

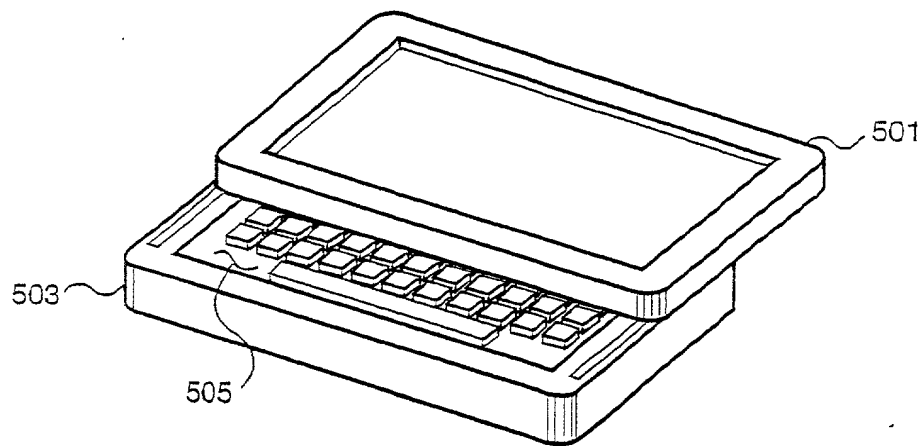


Figure 2B

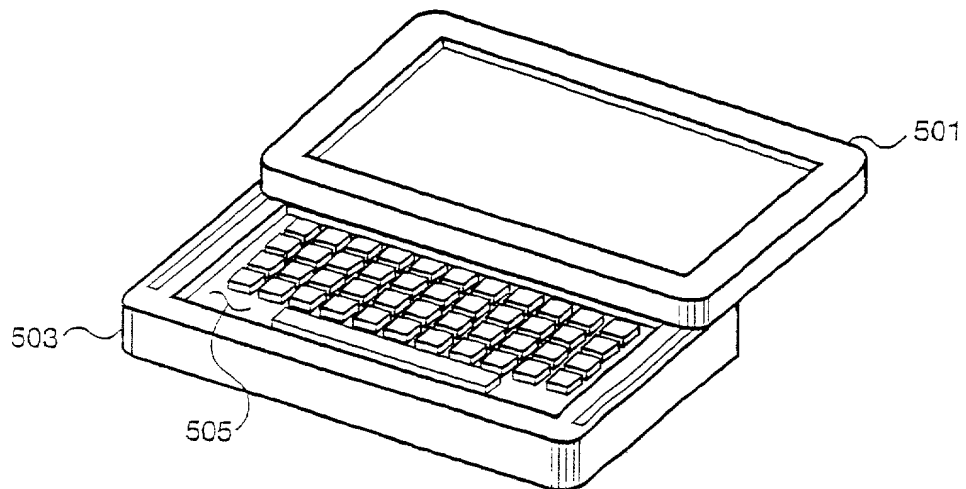


Figure 2C

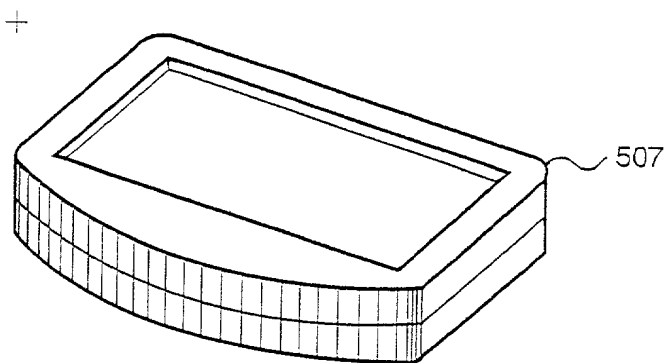


Figure 2D

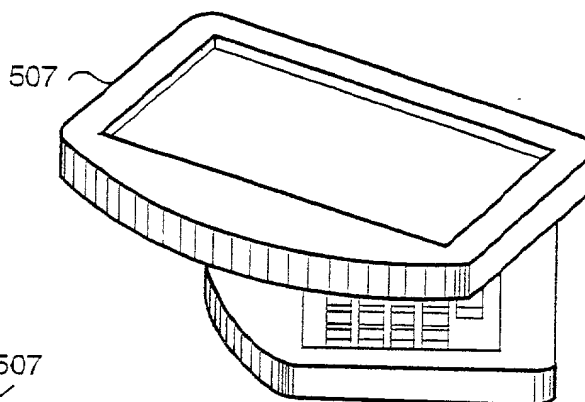


Figure 2E

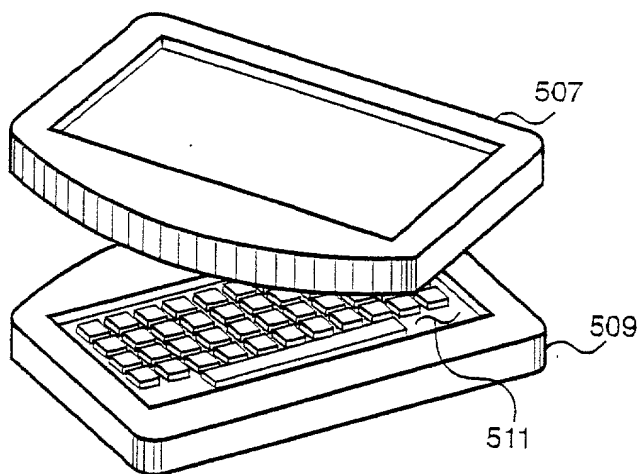


Figure 2F

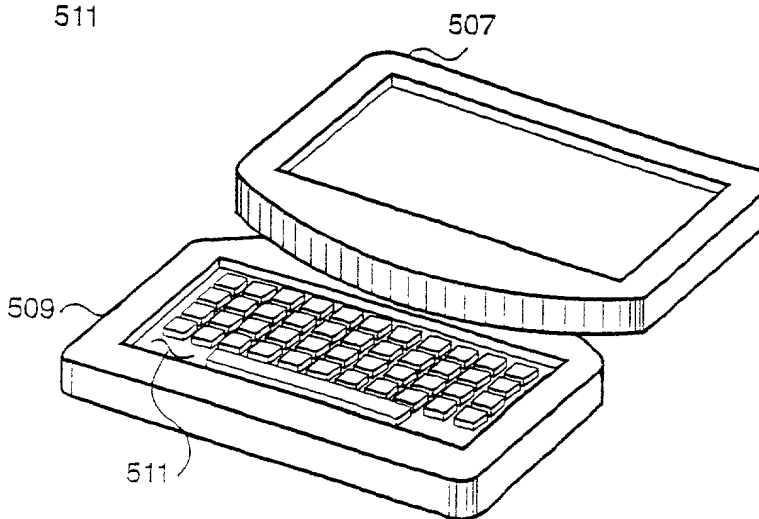


Figure 2G

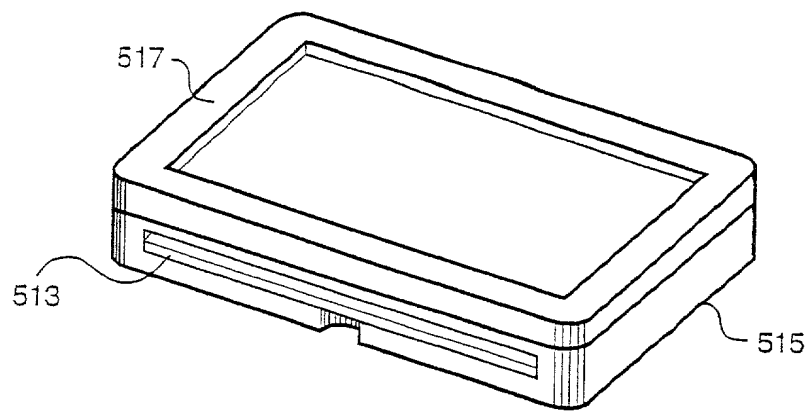


Figure 2H

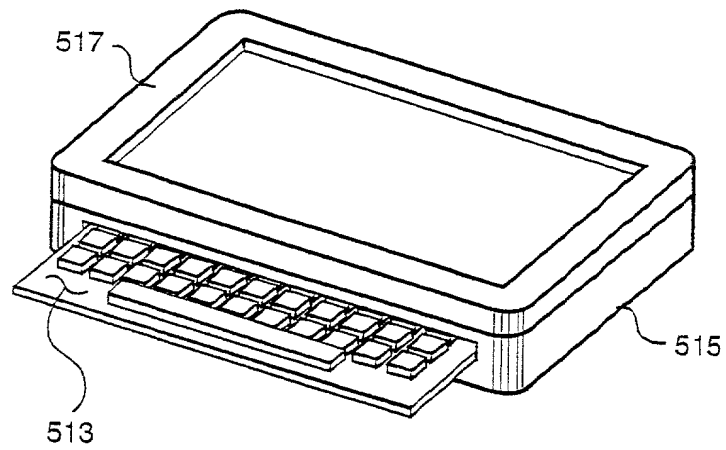


Figure 2I

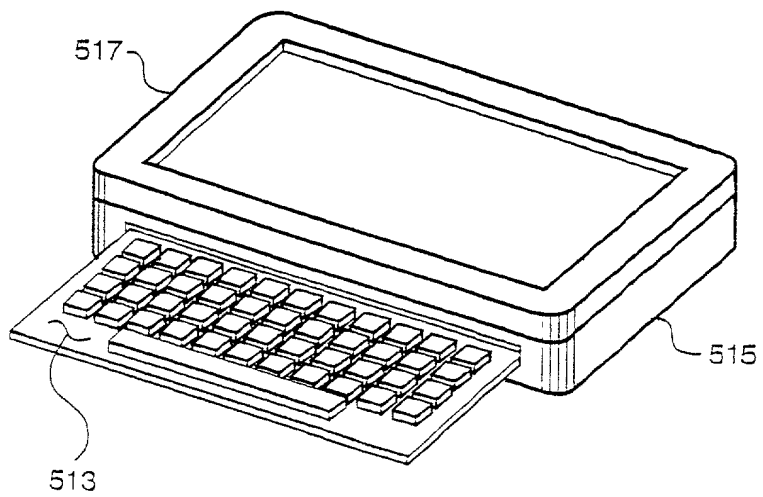


Figure 2J

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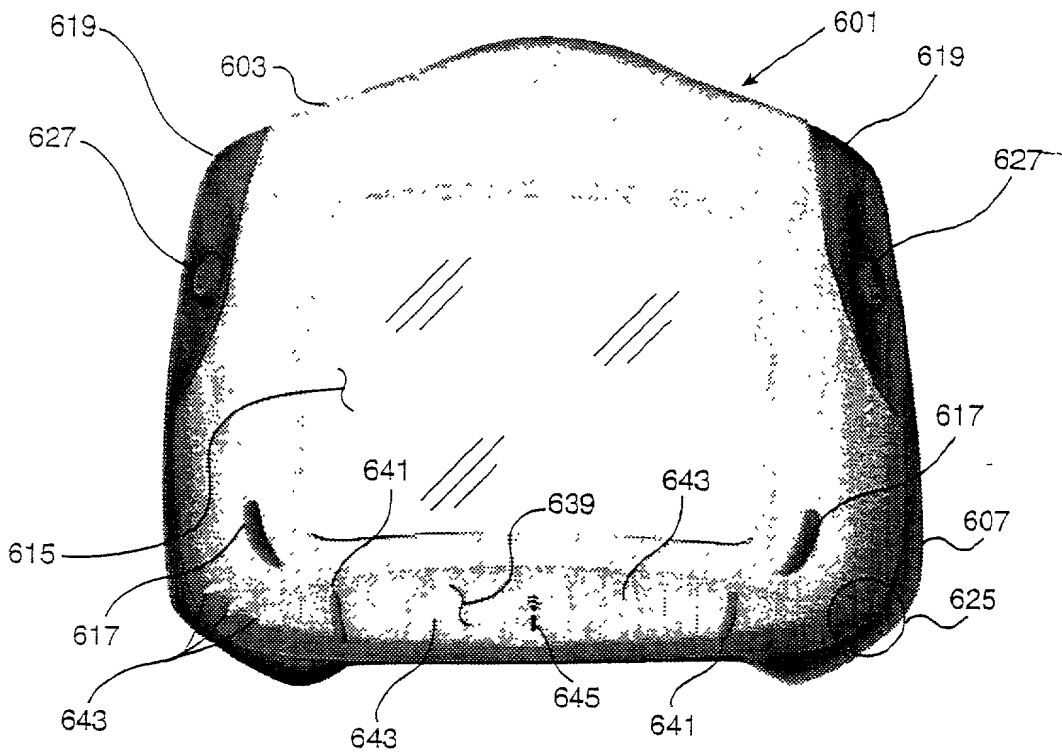


Figure 2K

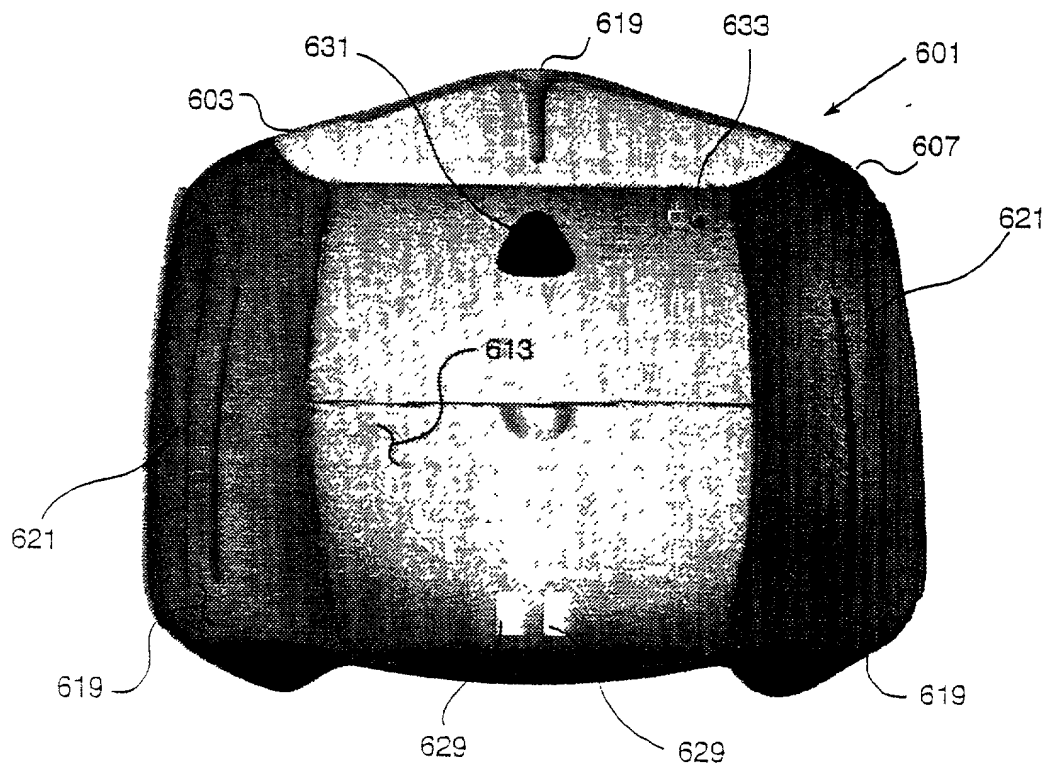


Figure 2L

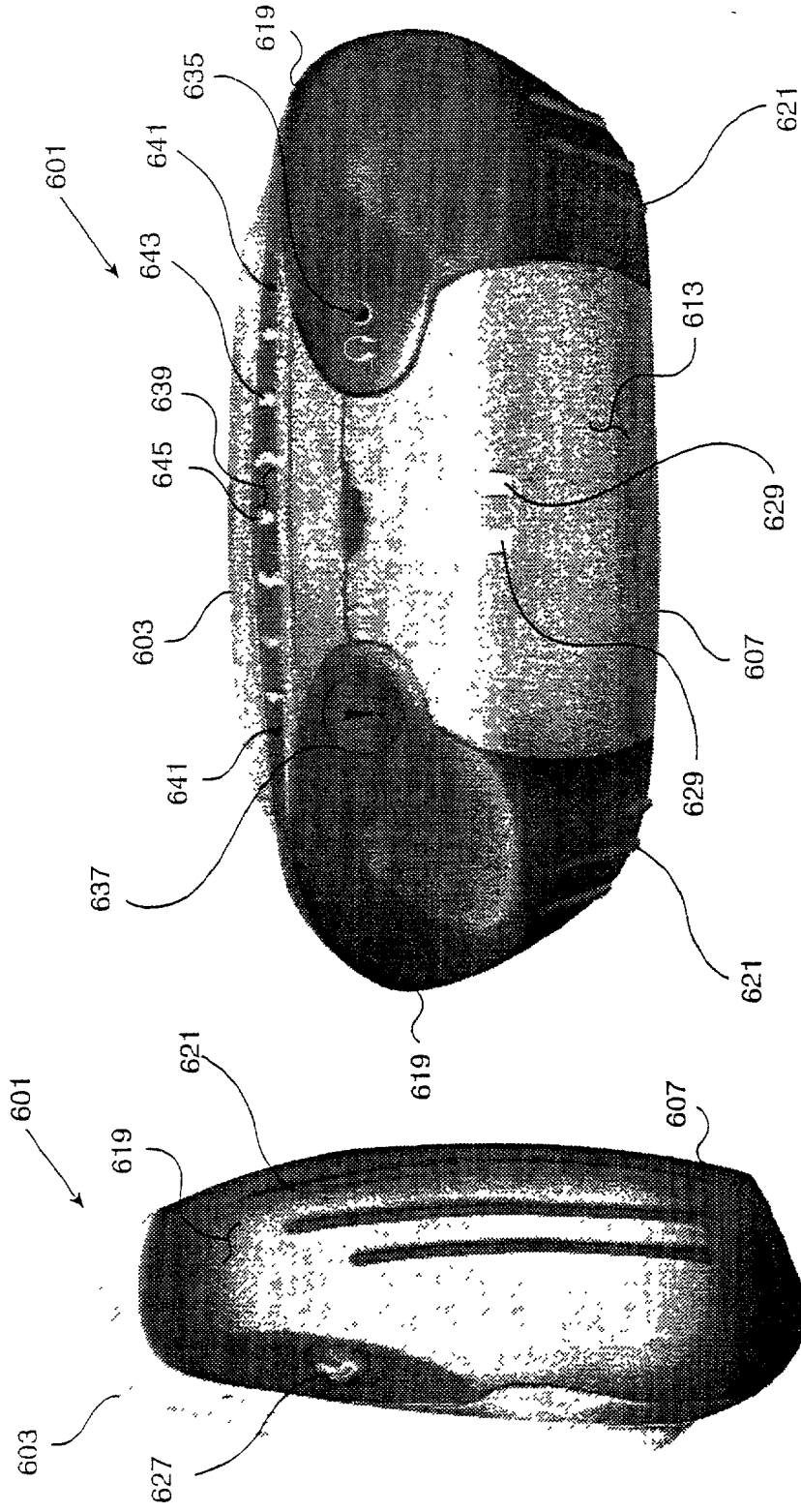


Figure 2M

Figure 2N



2025-01-20 20:44:55

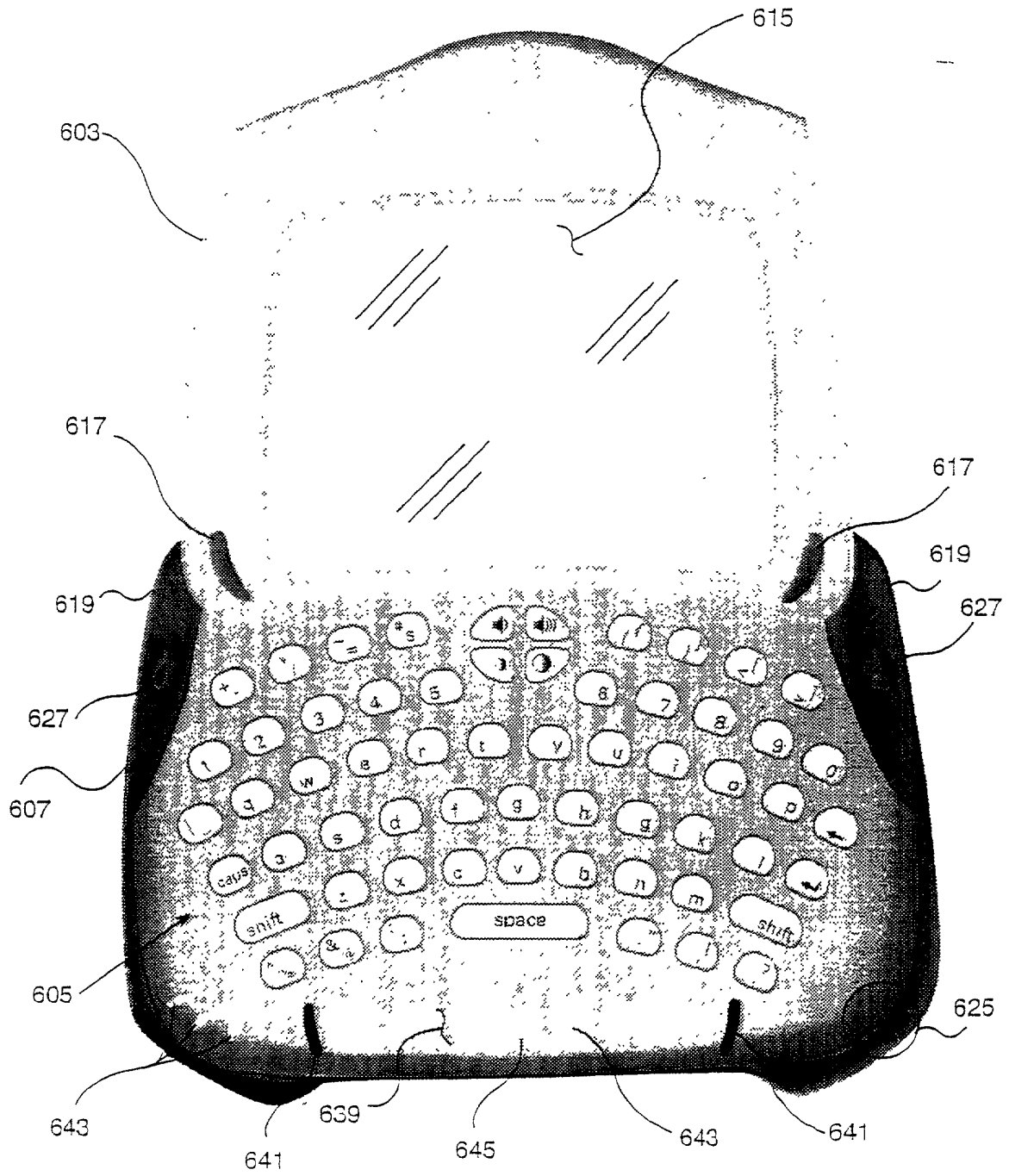


Figure 20

20251020044653

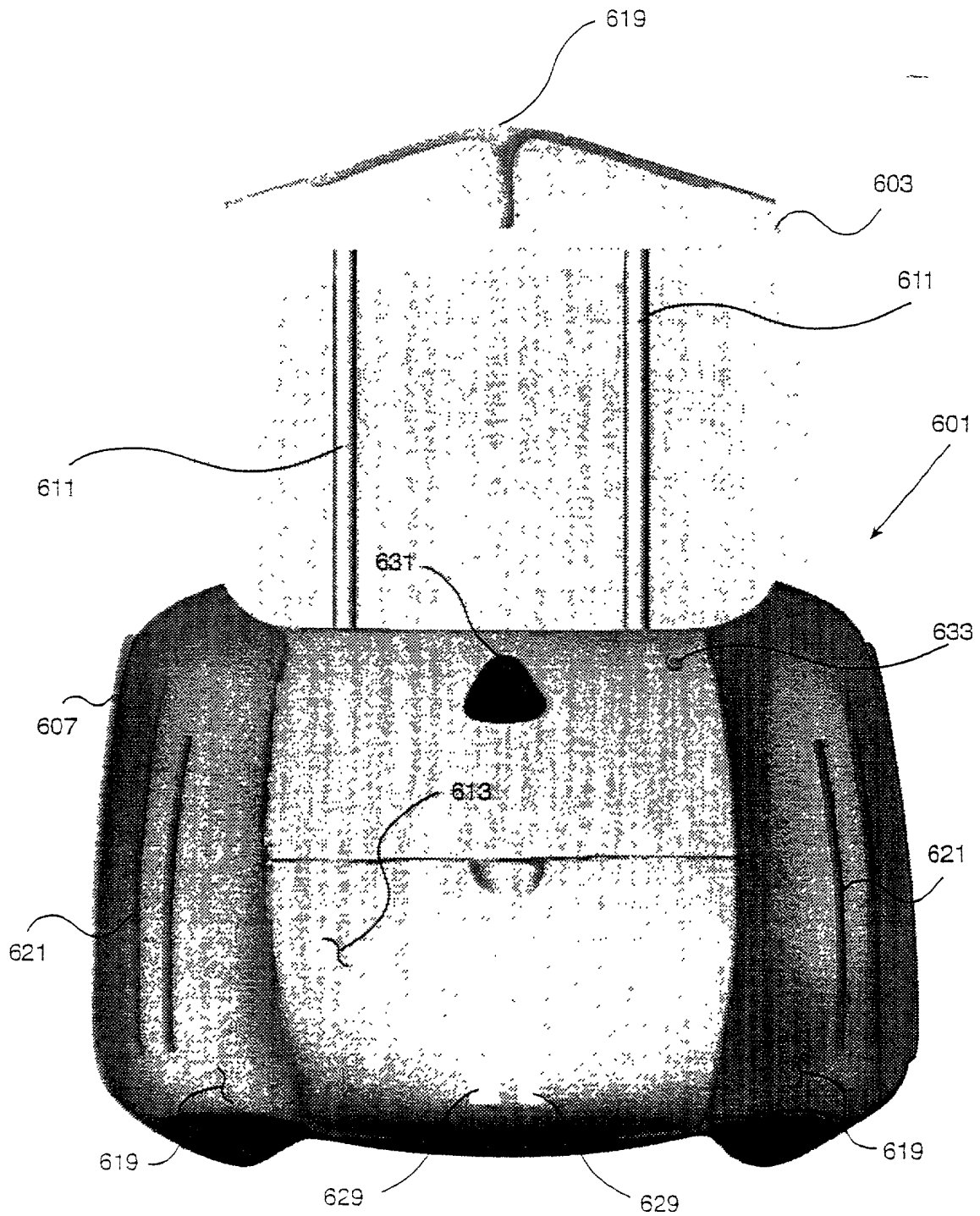
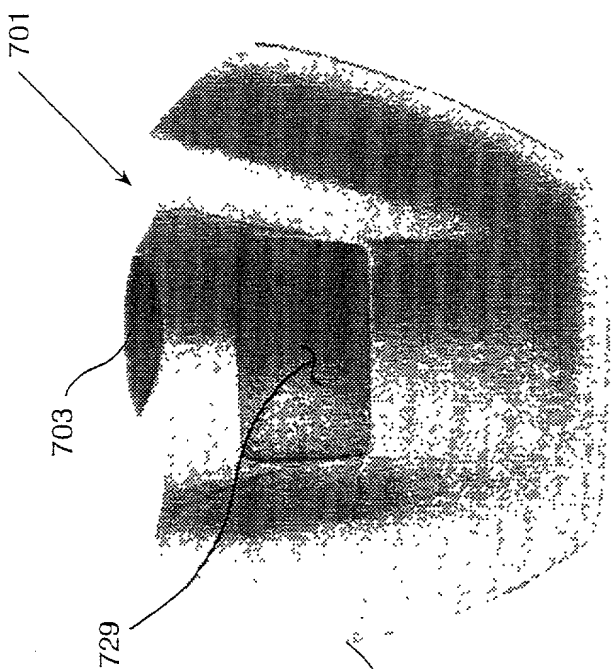
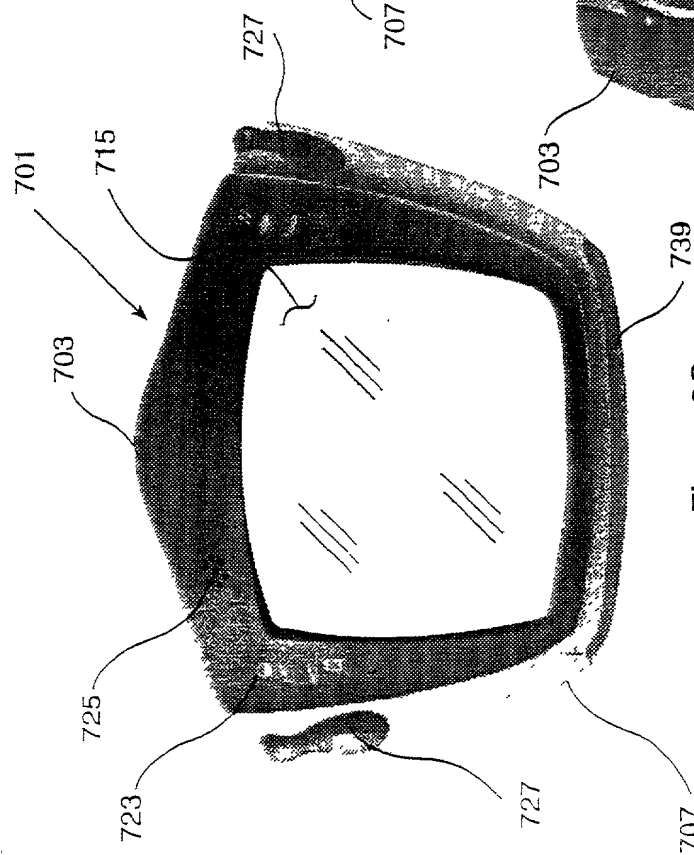


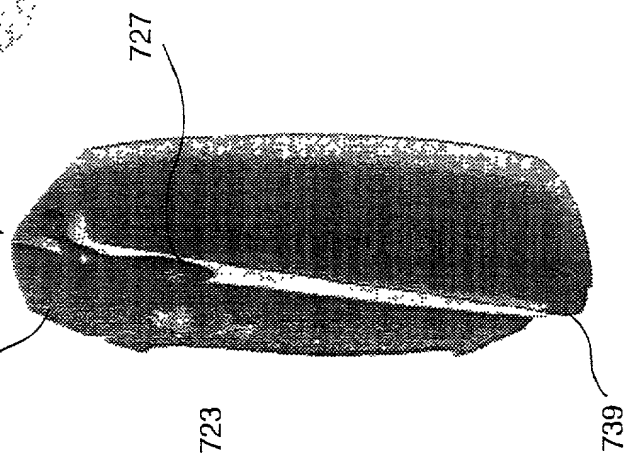
Figure 2P



**Figure 2R**



**Figure 2Q**



## Figure 2S

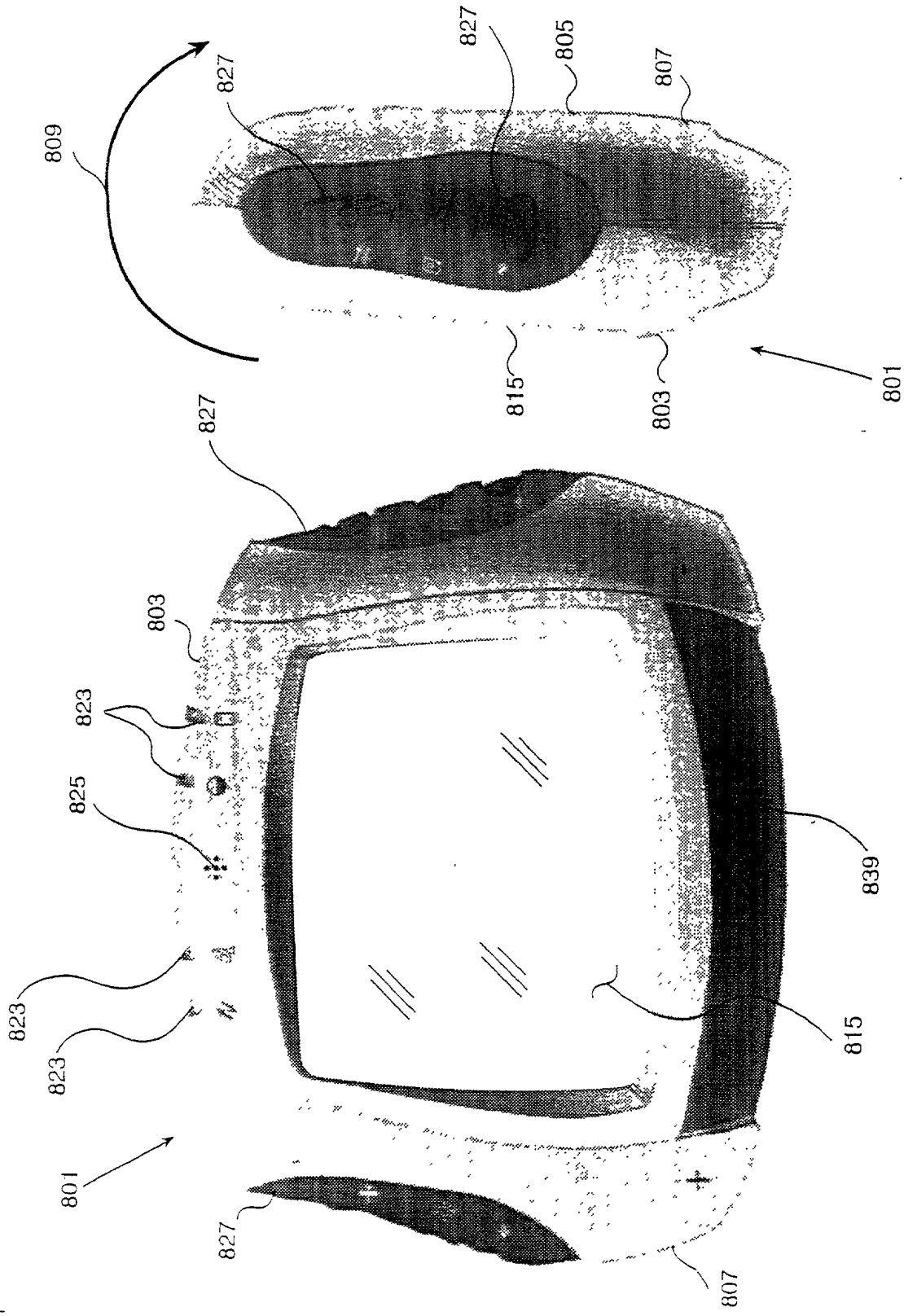


Figure 2T

Figure 2U

20570 2044660

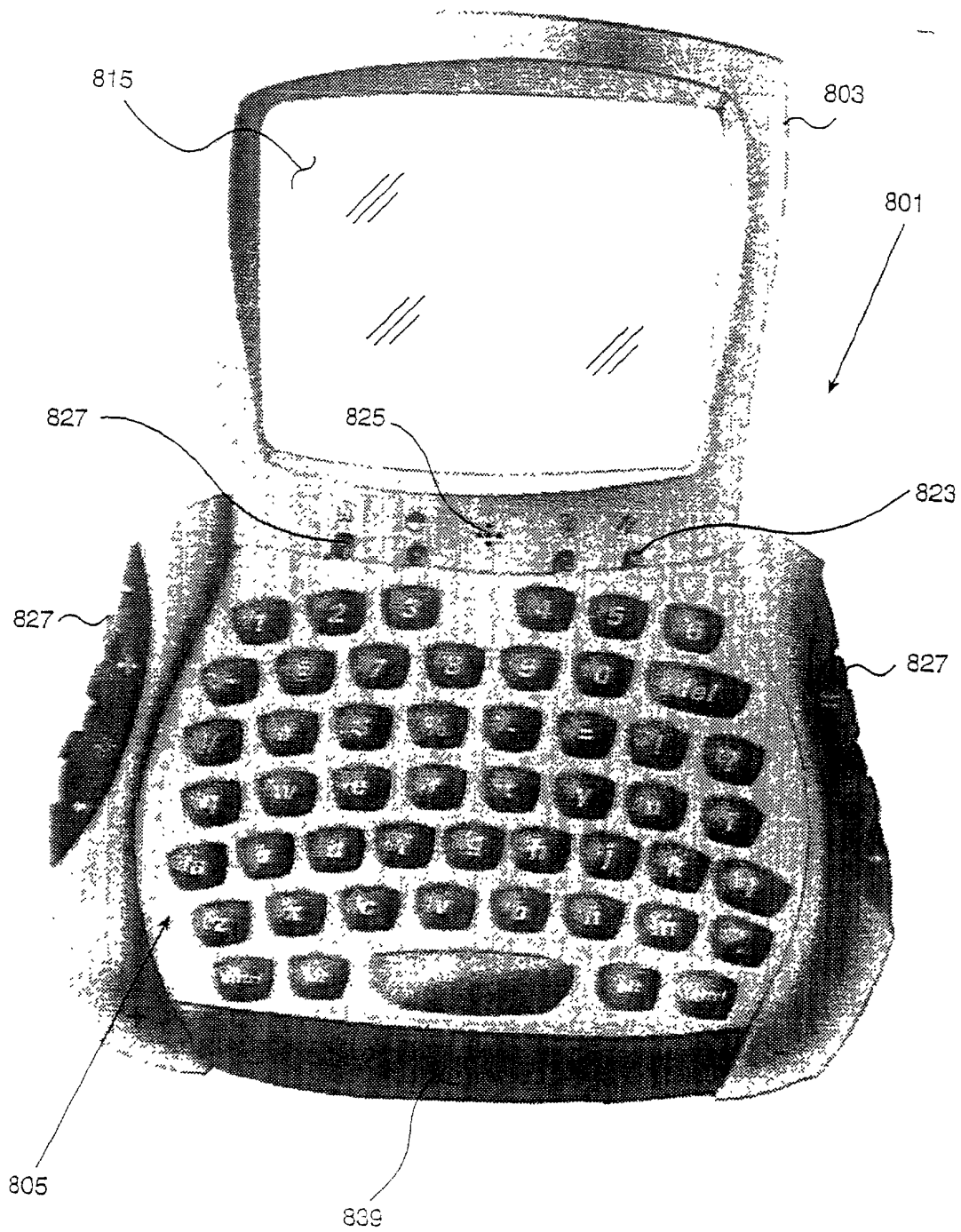


Figure 2V

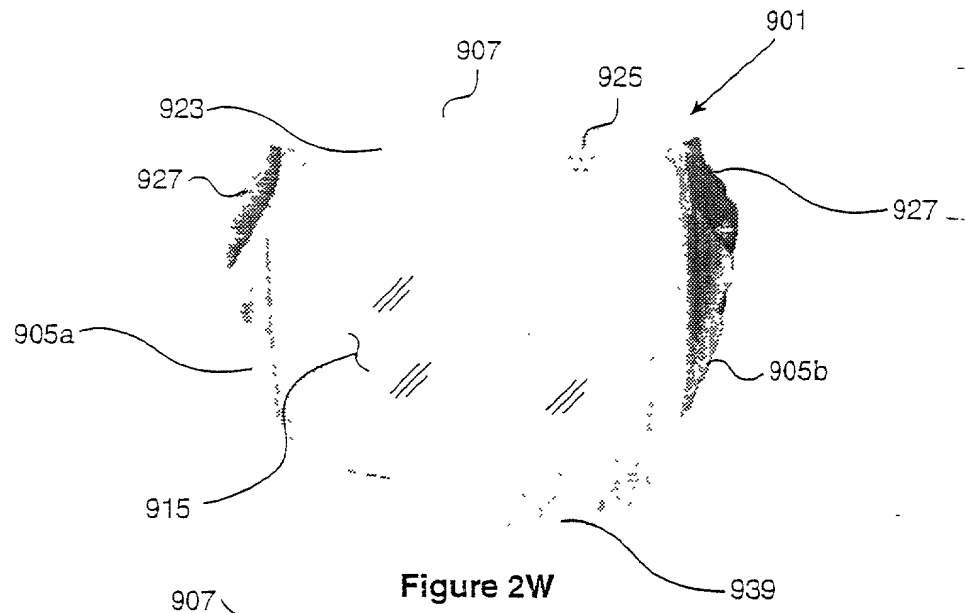


Figure 2W

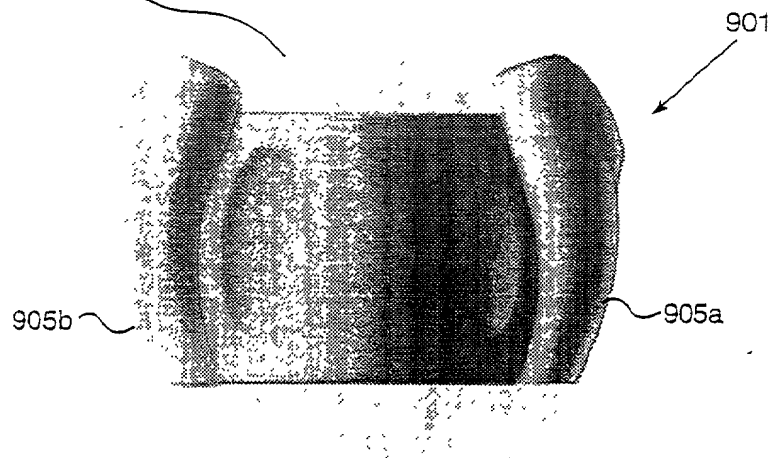


Figure 2X

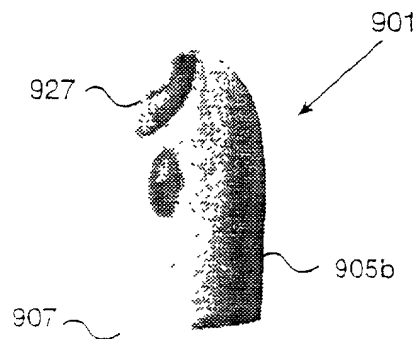
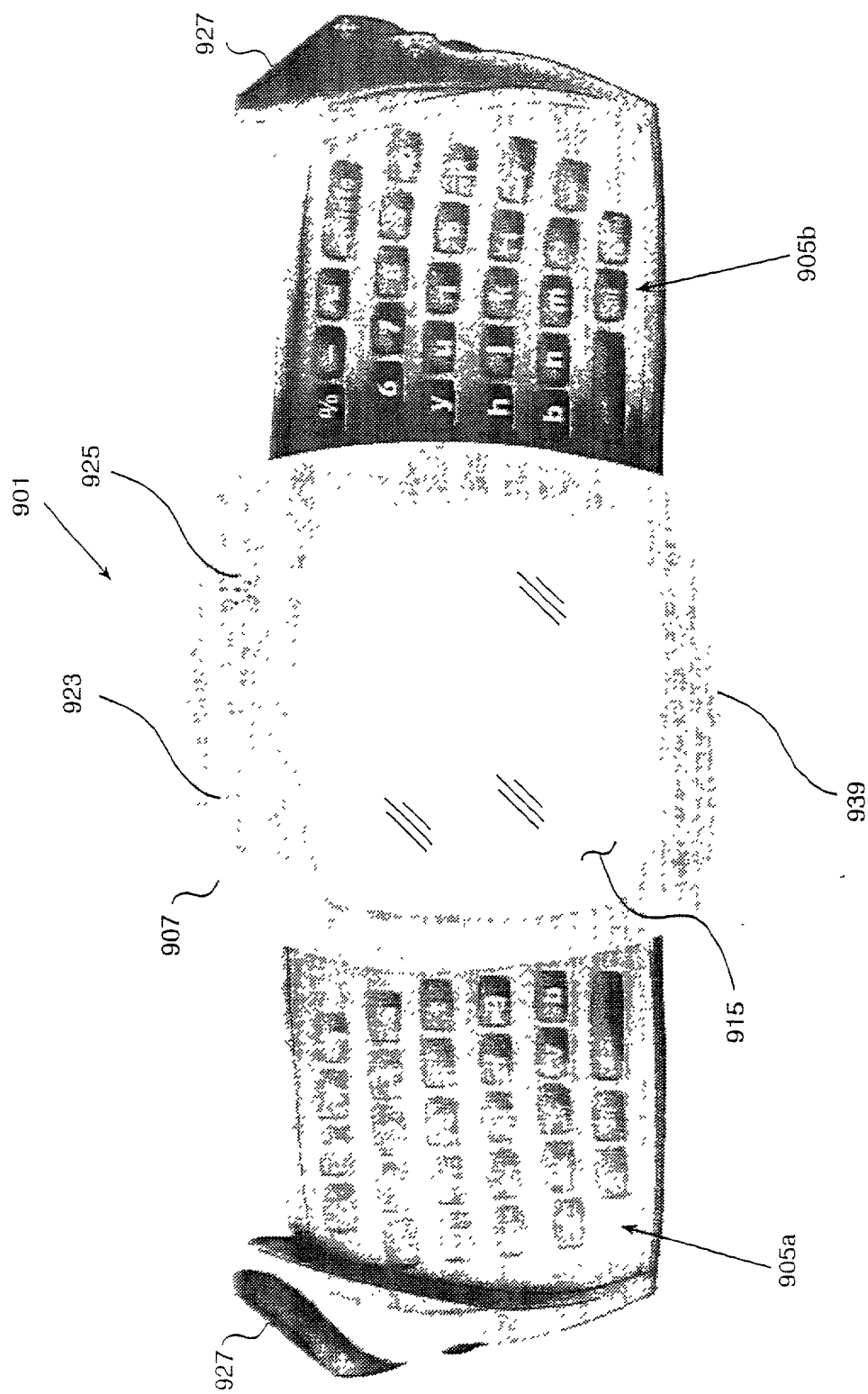
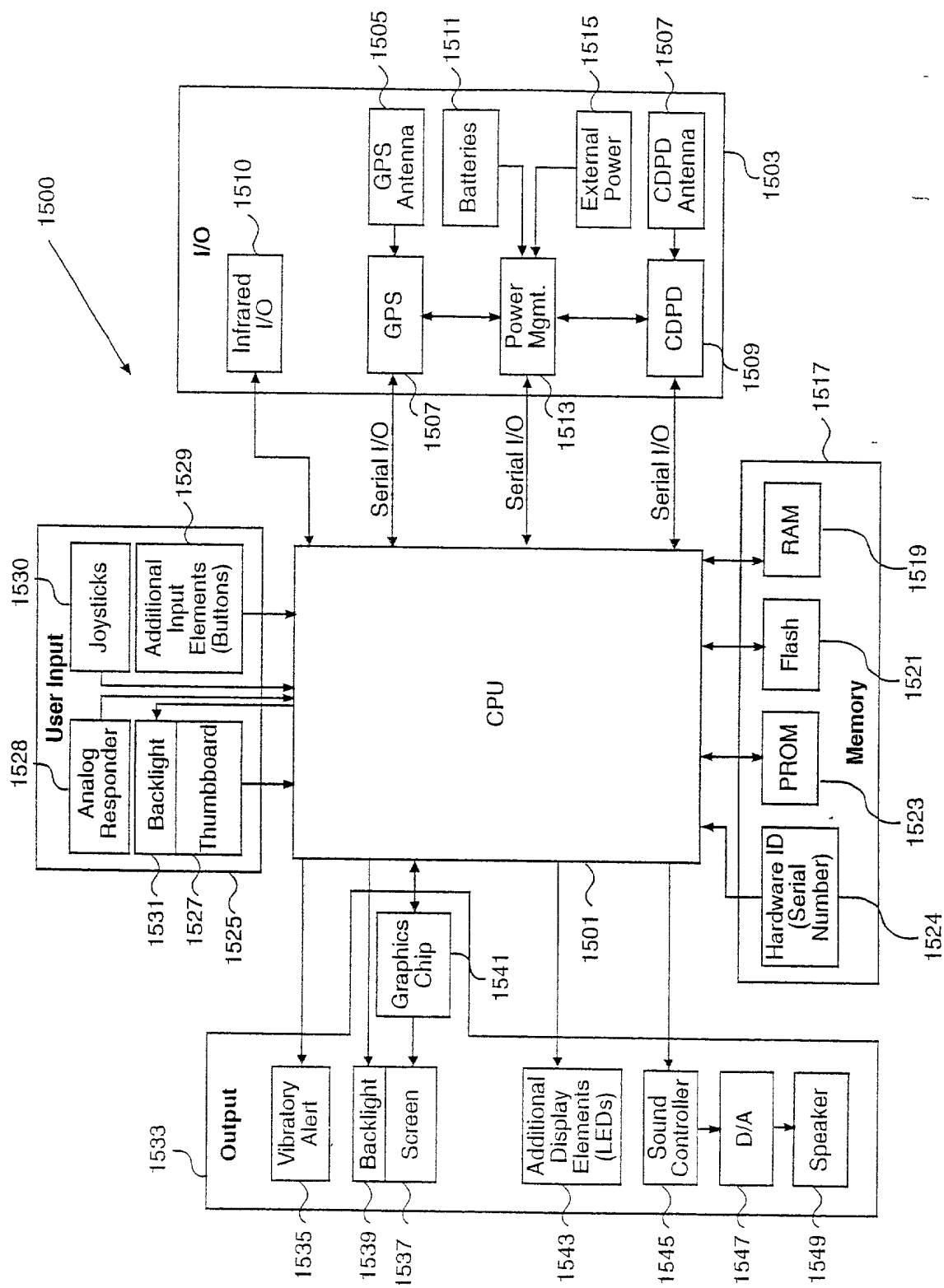


Figure 2Y



**Figure 2Z**



**Figure 3A**



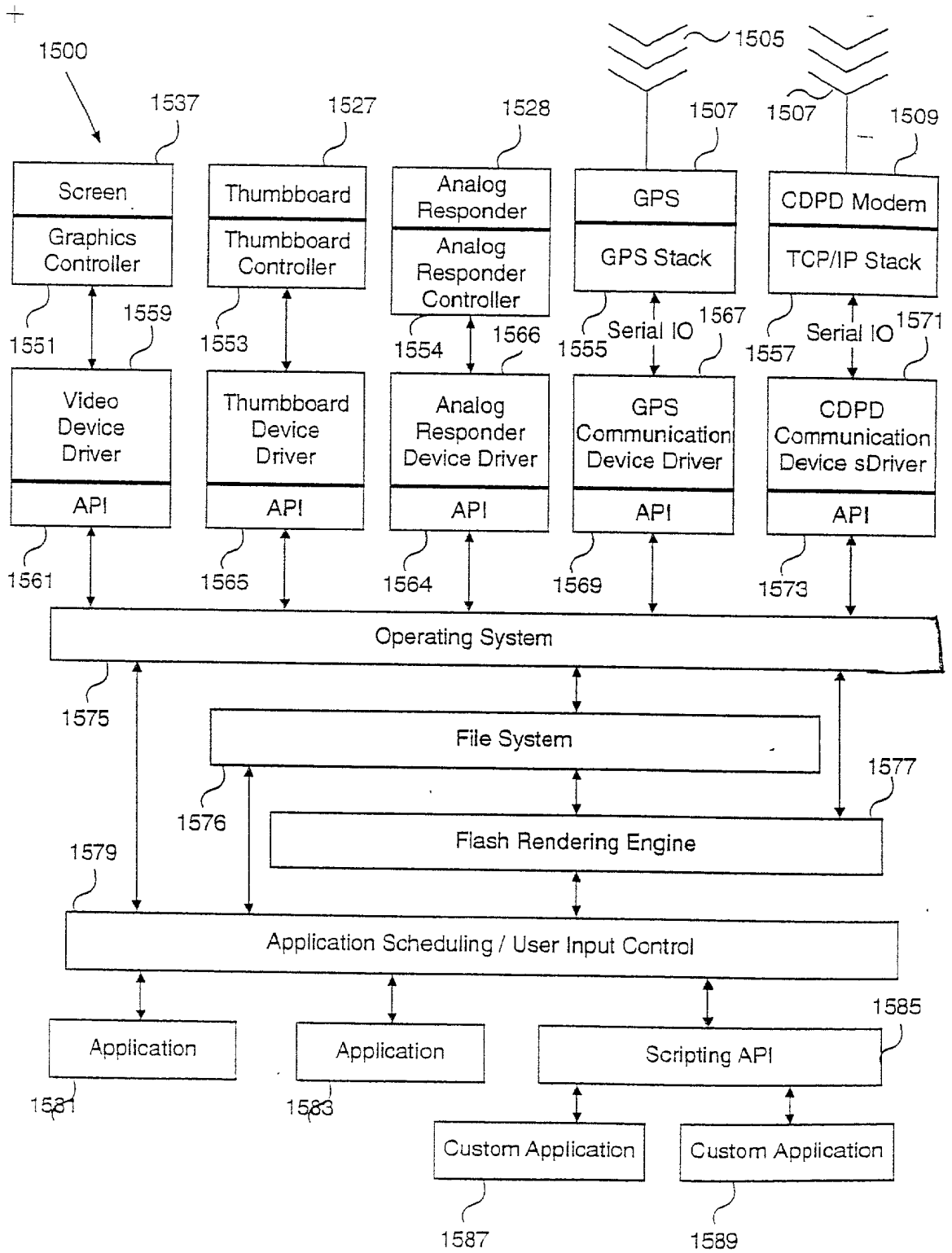


Figure 3B

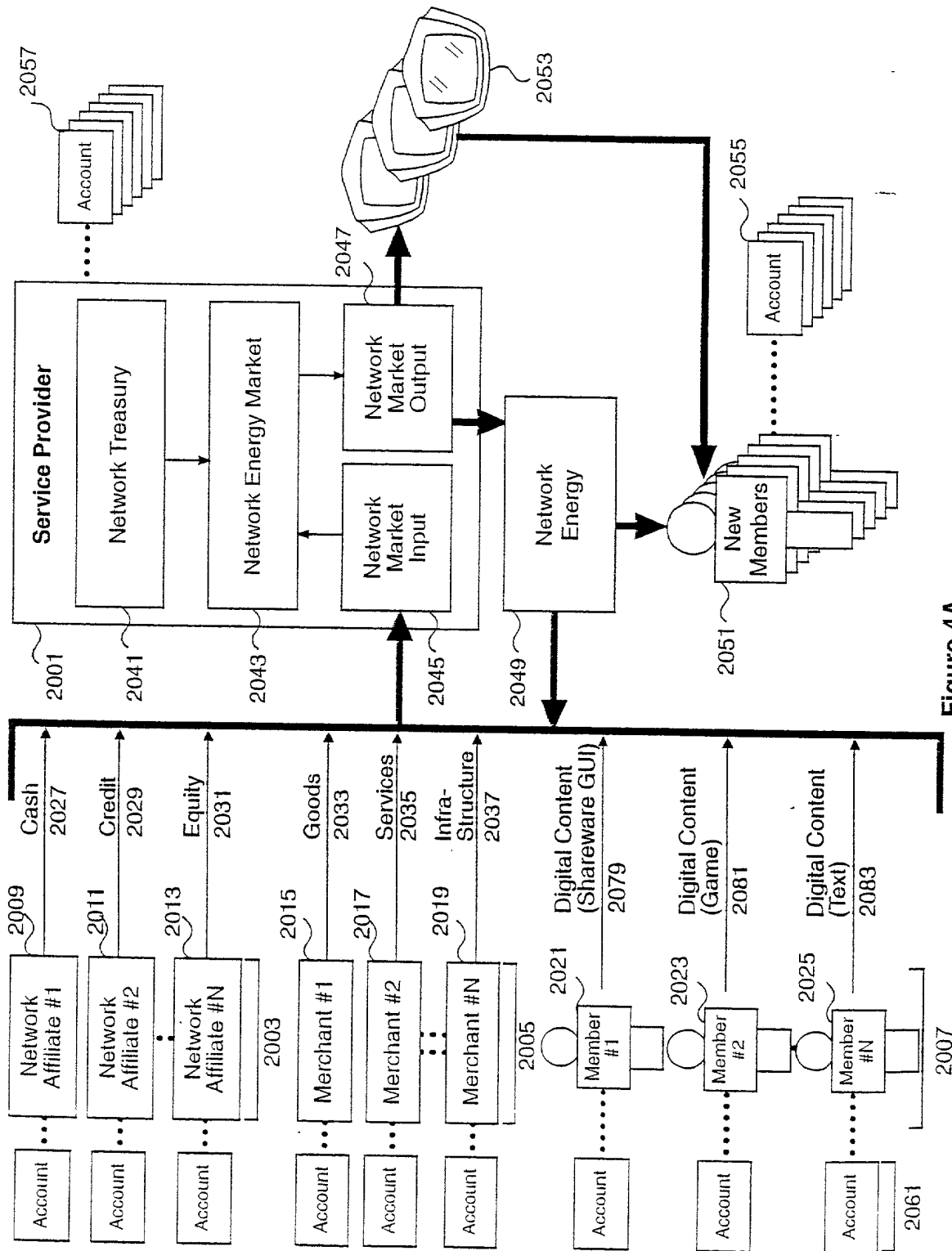


Figure 4A

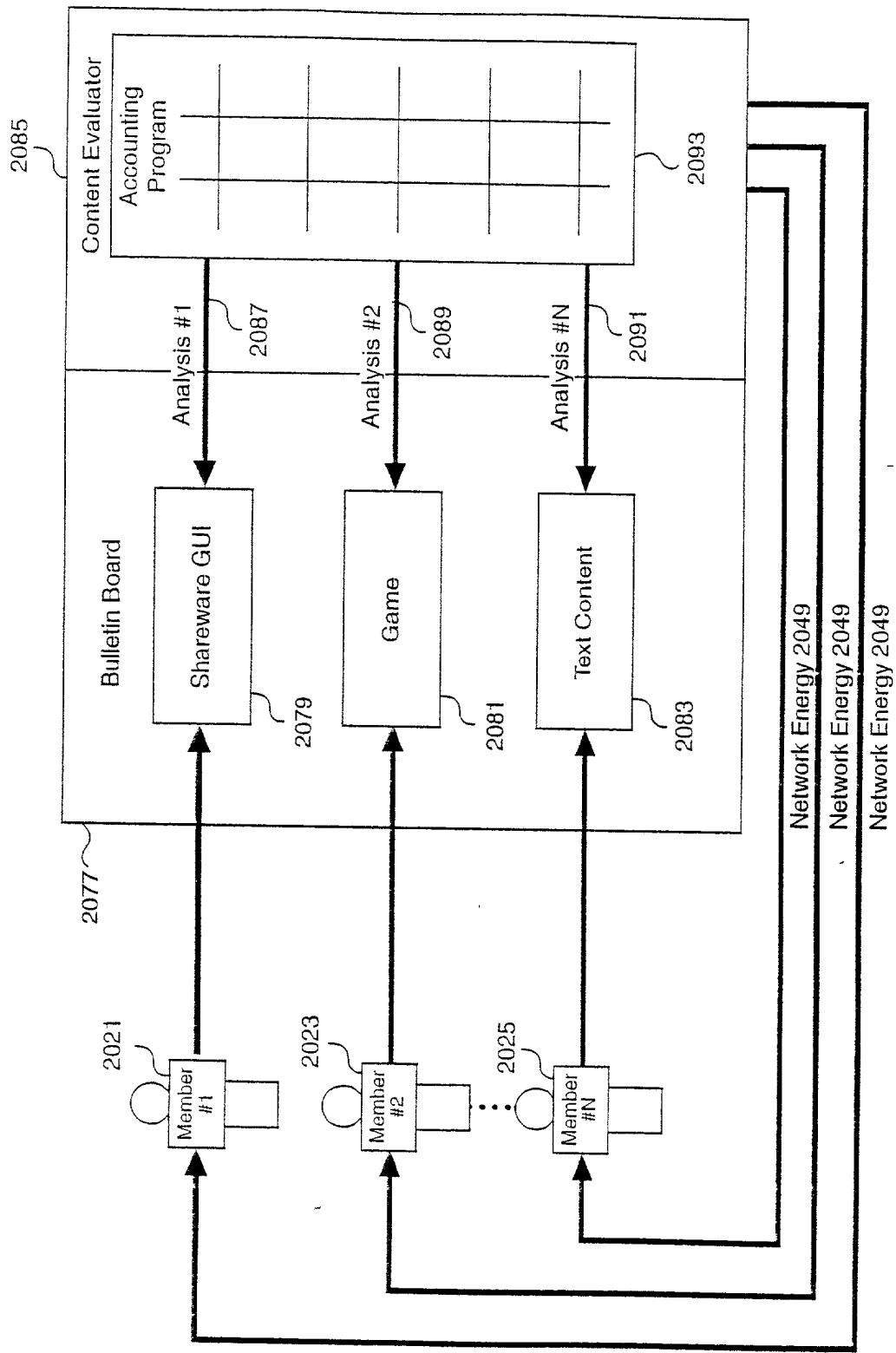


Figure 4B

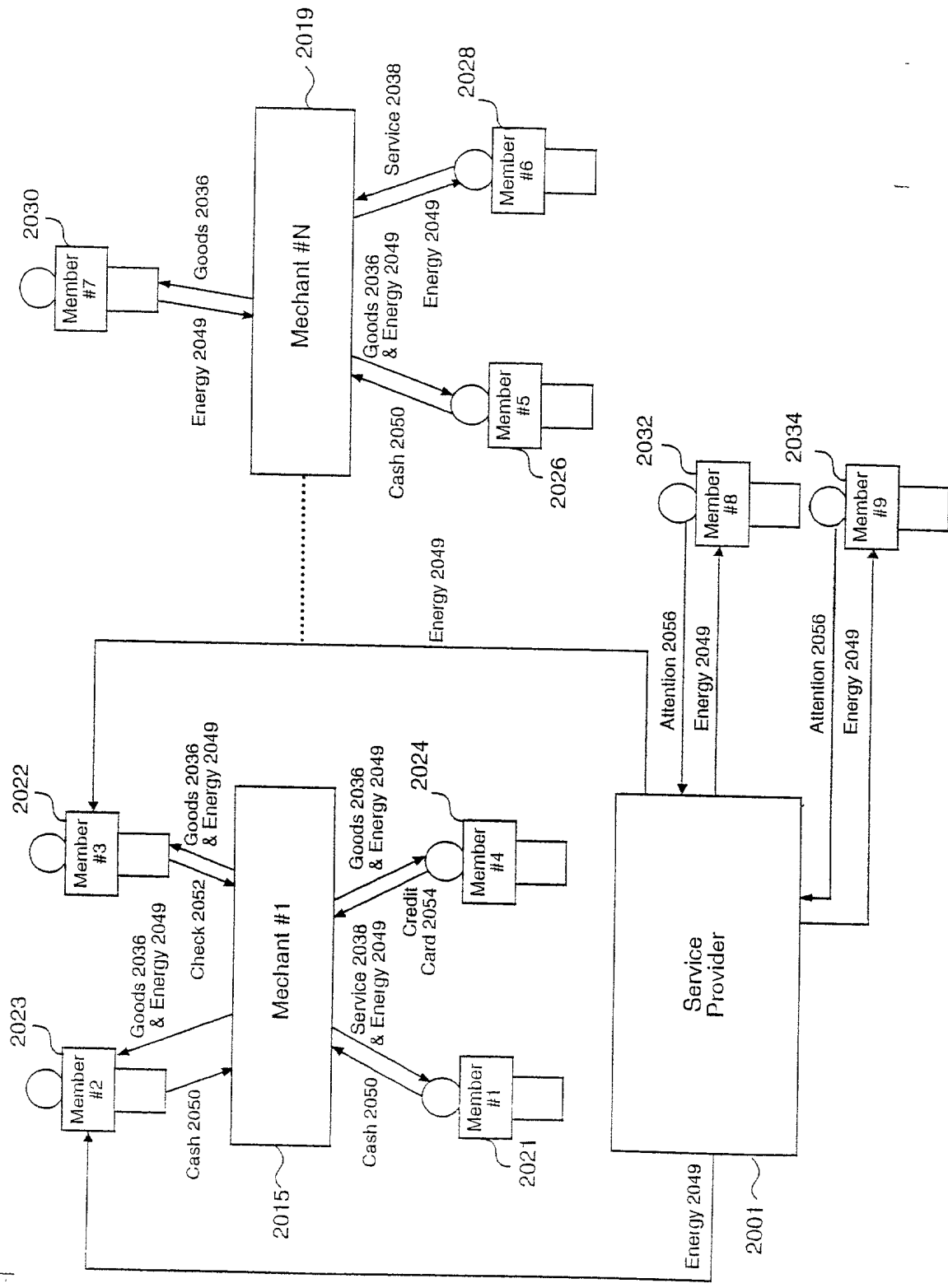


Figure 4C

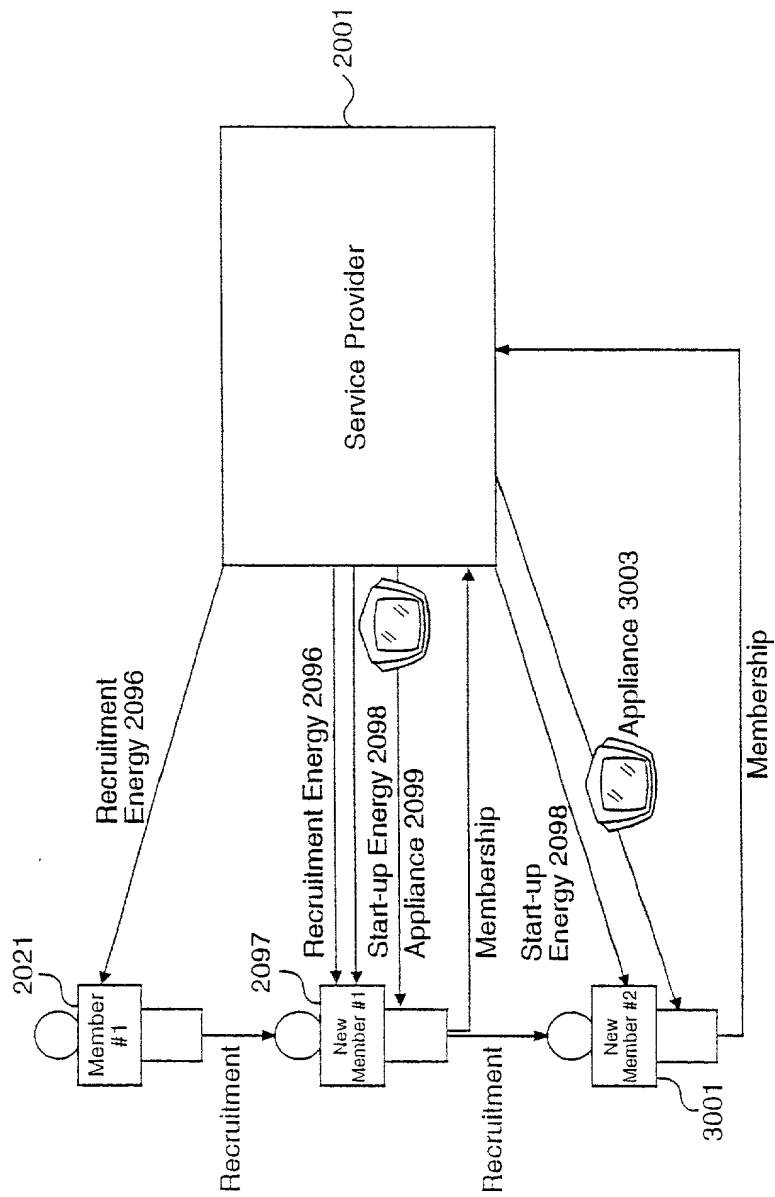


Figure 4D

3001	3003	3005	3007	3009	3011
	Type of Input Element	Non-Biasing	Starting Position	Needs On-Screen Indicator	Continuous
3013	One-Dimensional Touch Pad	Yes	No	No	Yes
3015	Elongated Button	Yes	No	No	Yes
3017	Touch Screen with Graphical Slider	Yes	No	Yes	Yes
3019	Jog Wheel	No	Yes	Yes	Yes
3021	Scroll Wheel	No	No	Yes	Yes
3023	Thumb Wheel	No	No	Yes	Yes
3025	Linear Sliding Knob	No	Yes	No	Yes
3027	Touch Screen with Graphical Radio Buttons	Yes	No	Yes	No
3029	Dedicated Buttons on Keyboard	Yes	No	No	No
3031	Two-Dimensional Touch Pad	Yes	No	No	Yes

Figure 5A

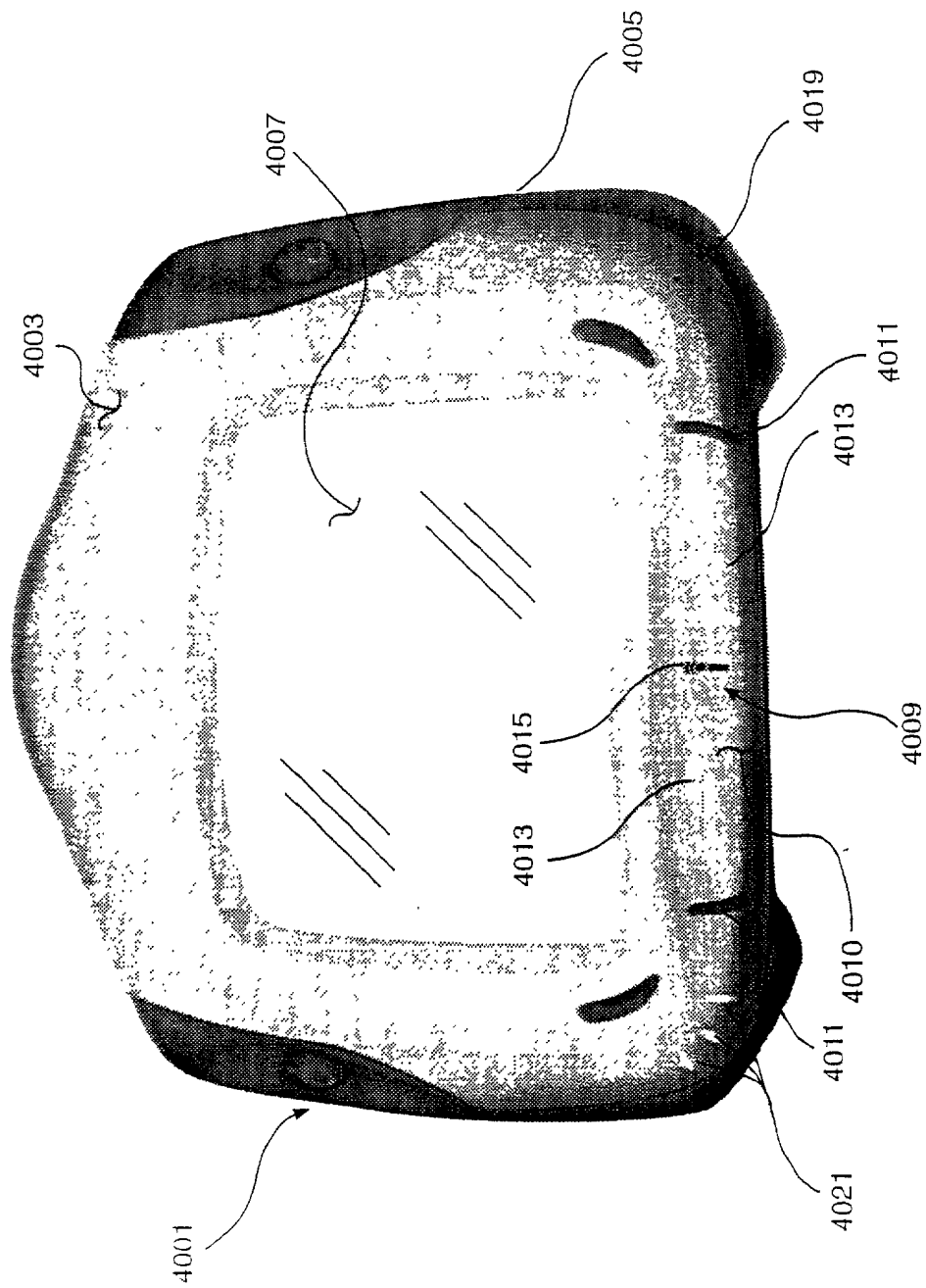


Figure 6A

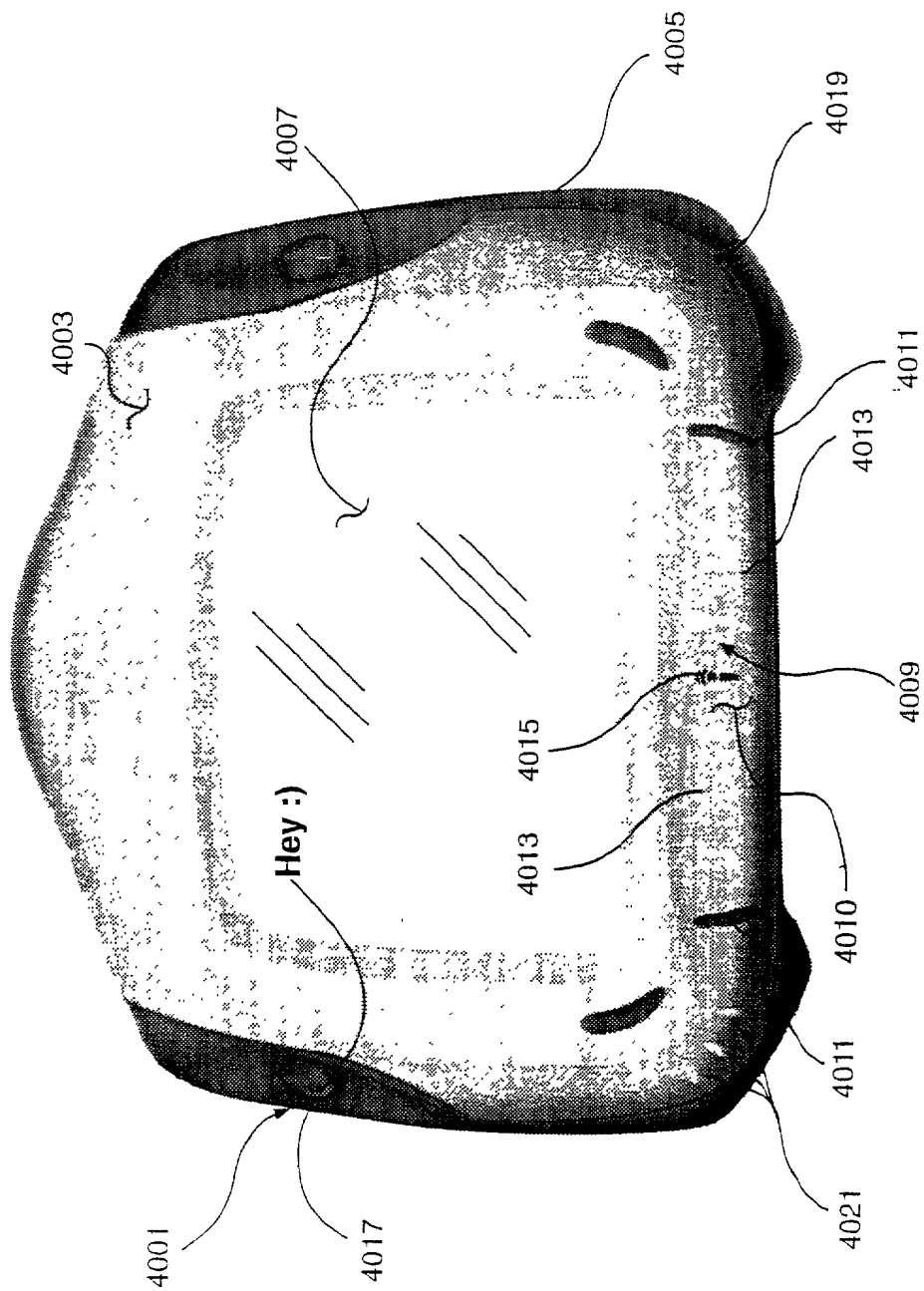


Figure 6B



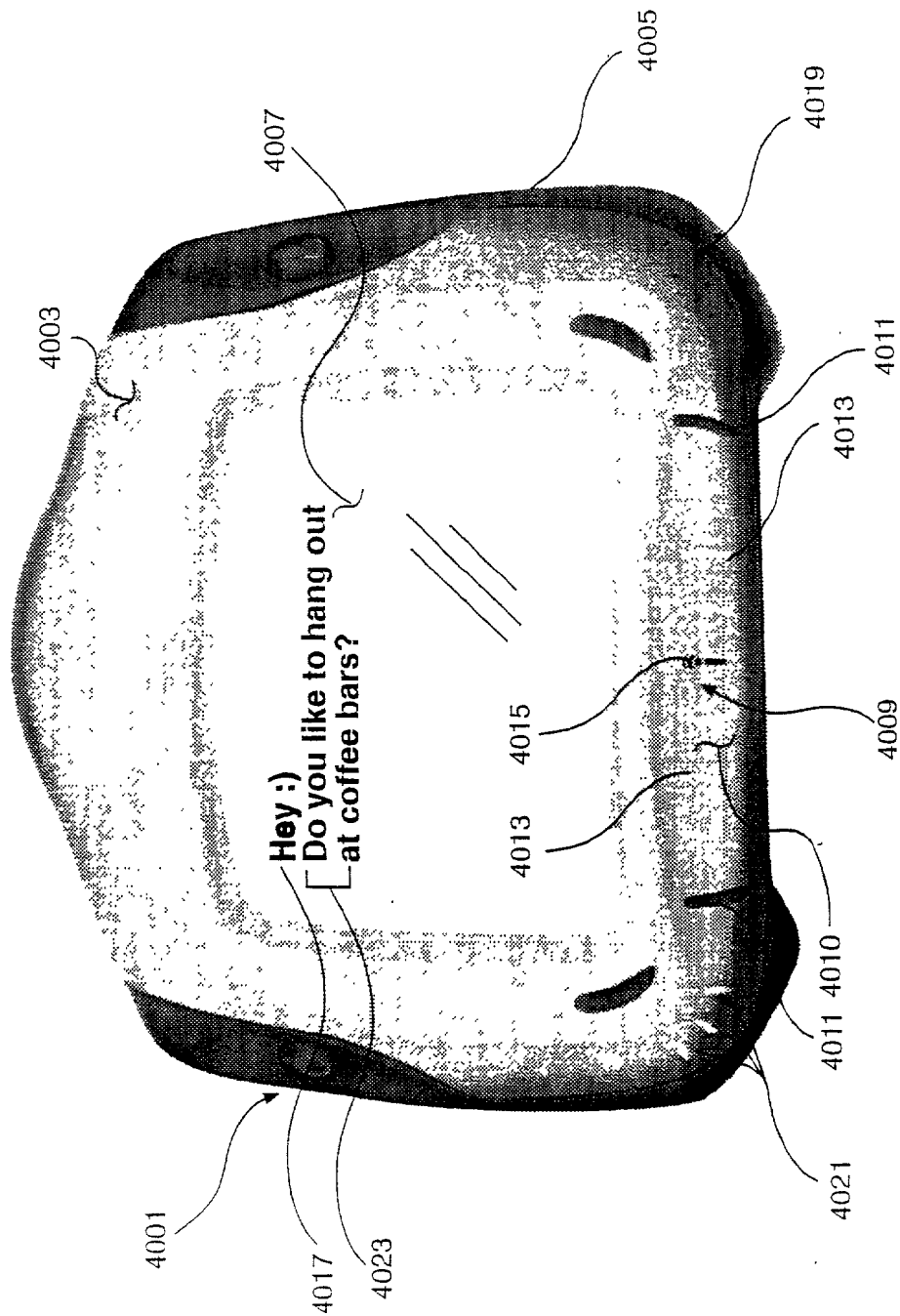


Figure 6C

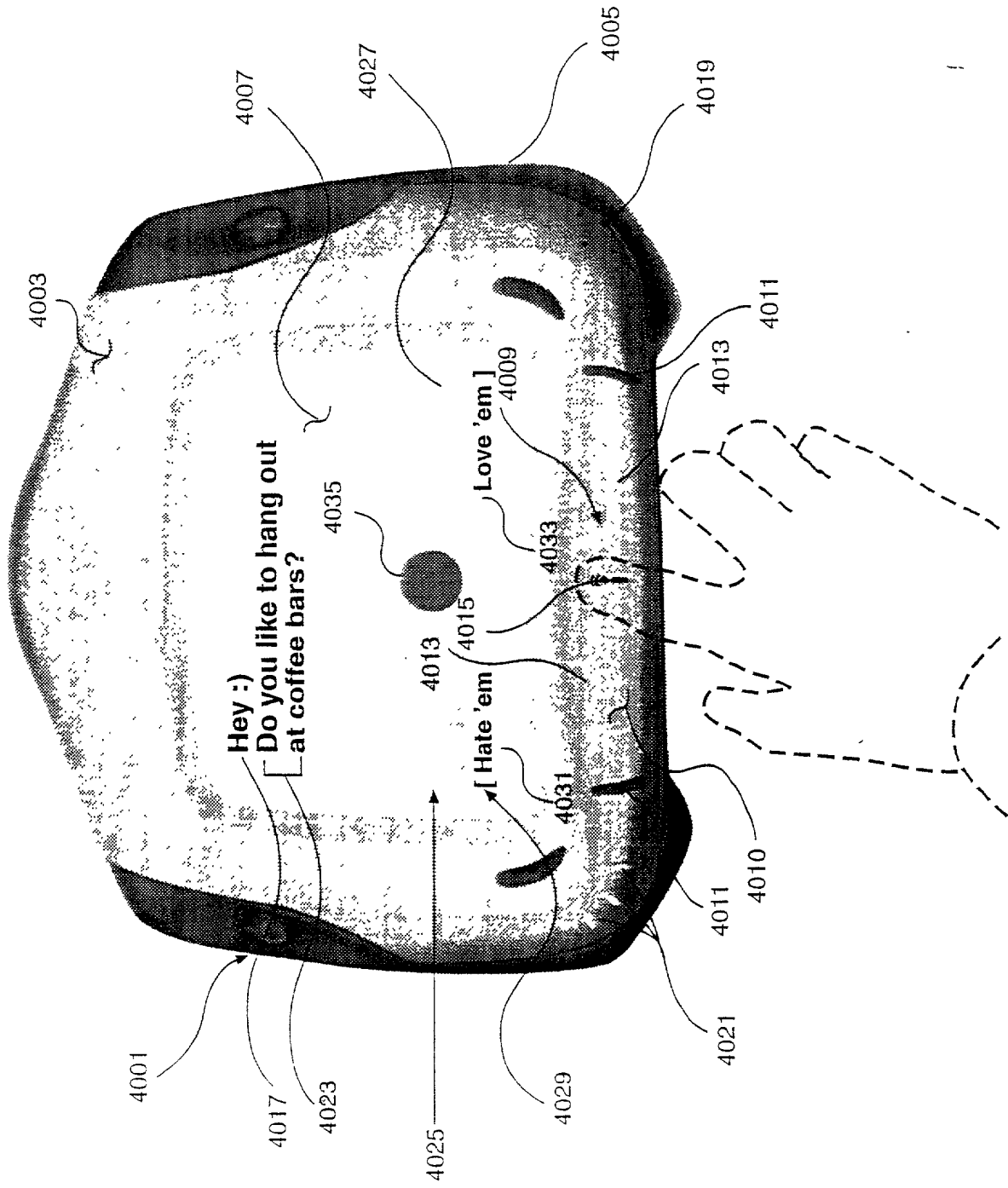
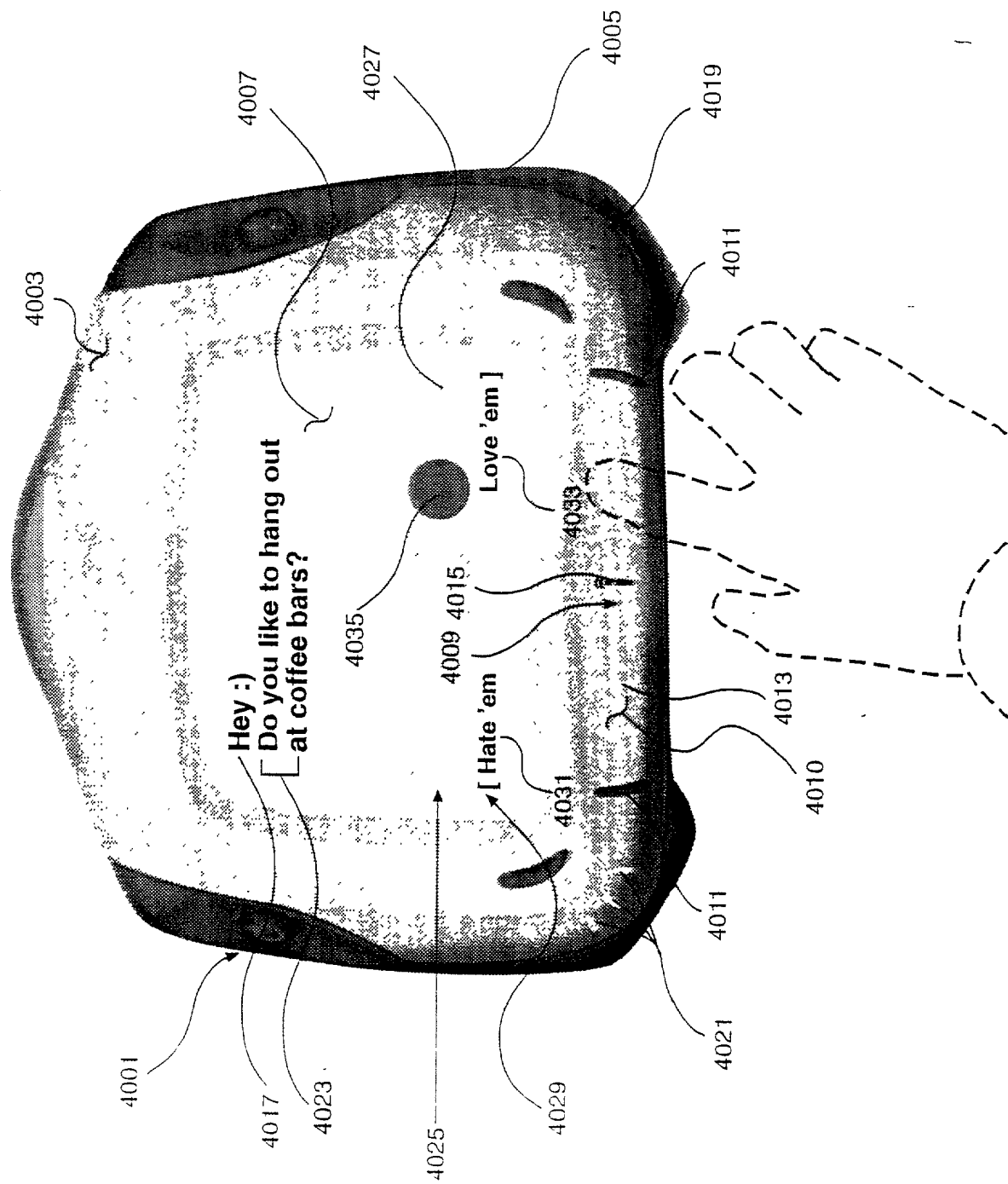


Figure 6D



**Figure 6E**

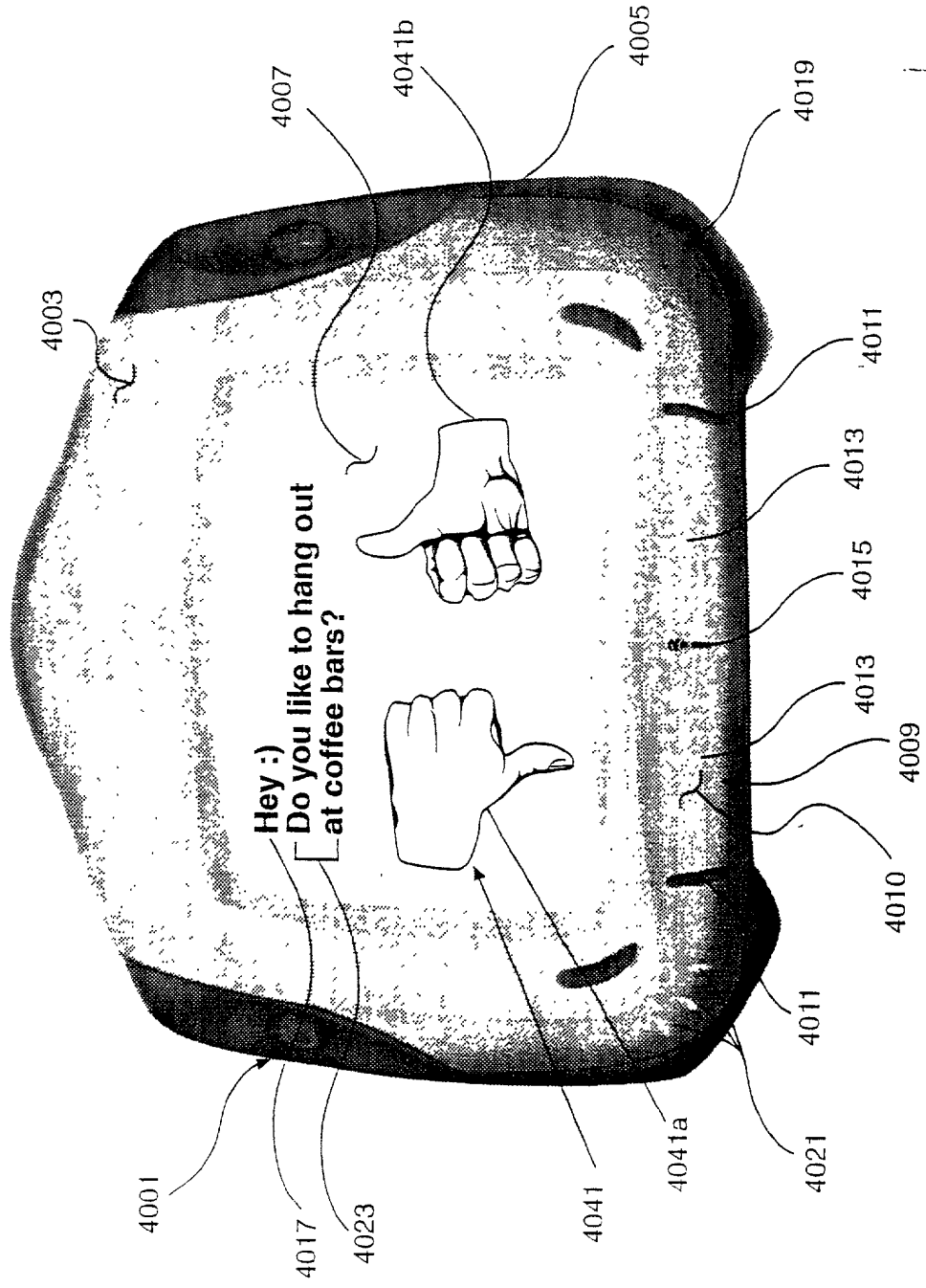


Figure 6F

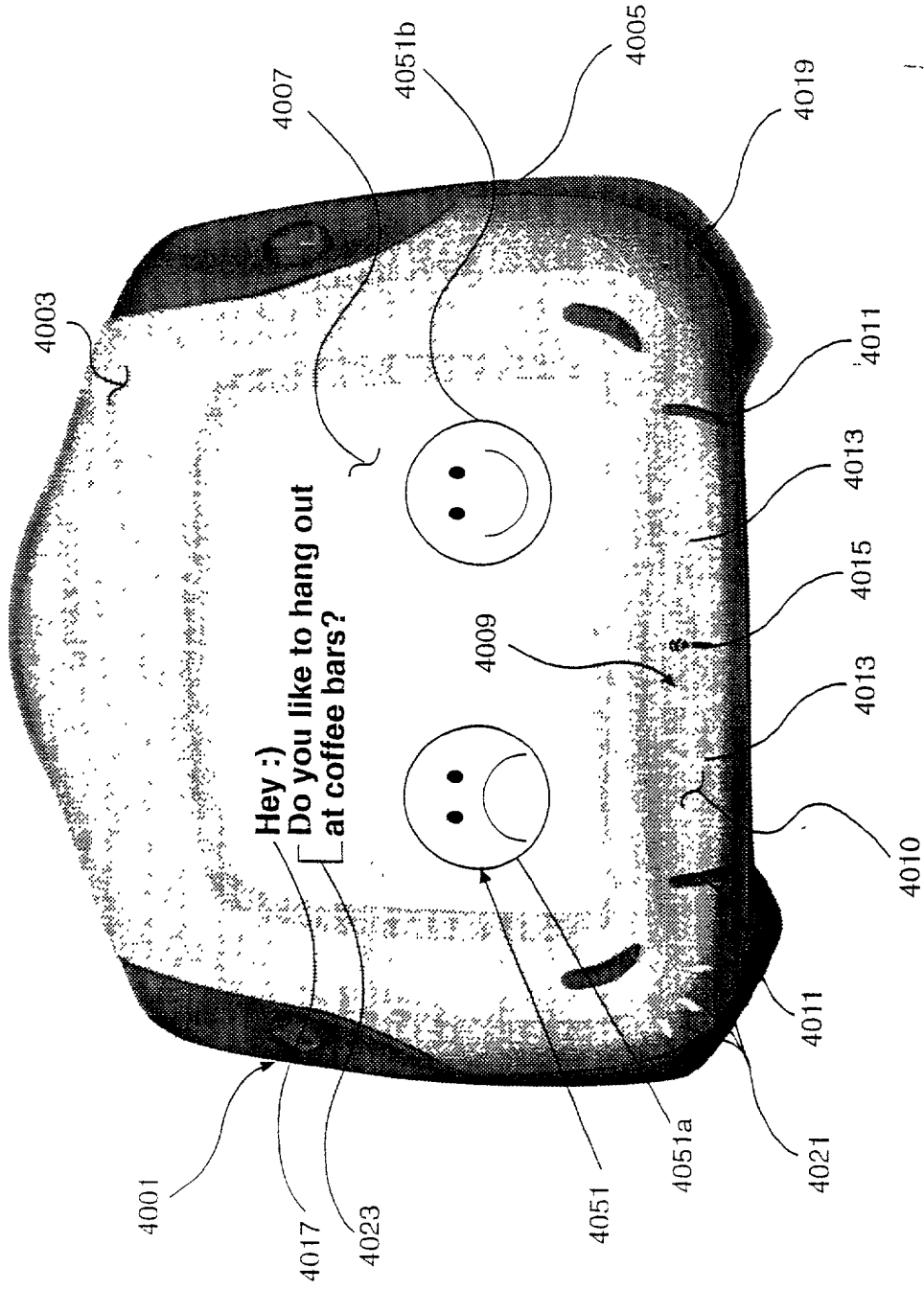
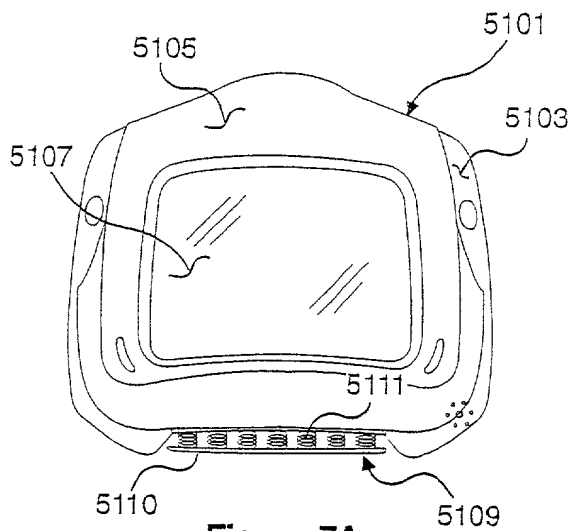
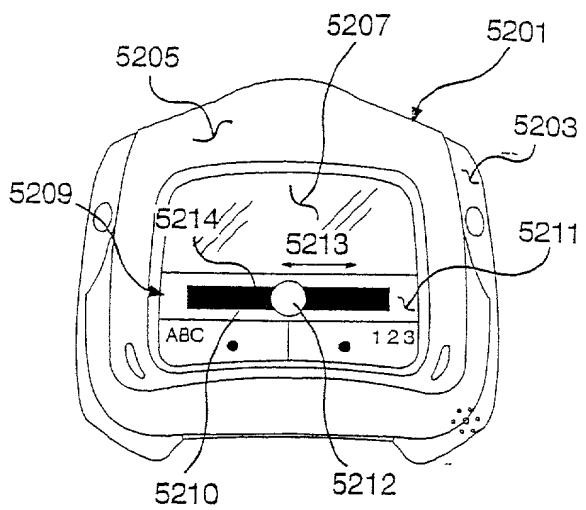


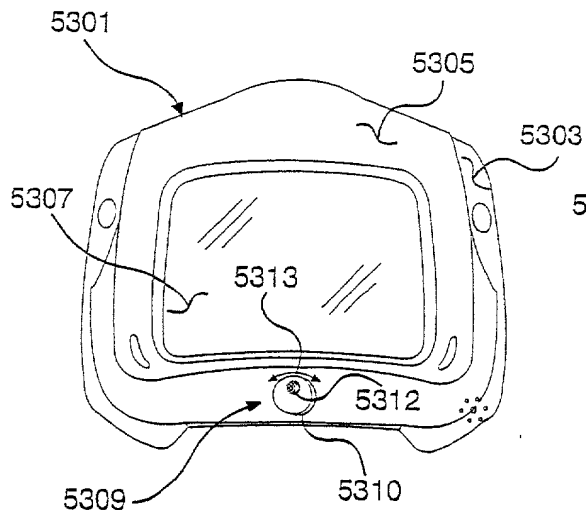
Figure 6G



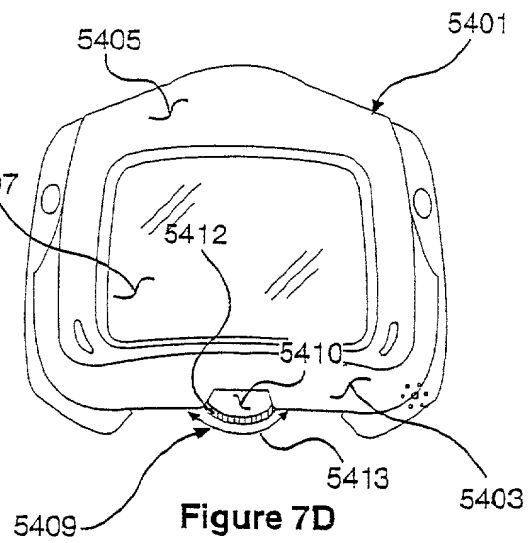
**Figure 7A**



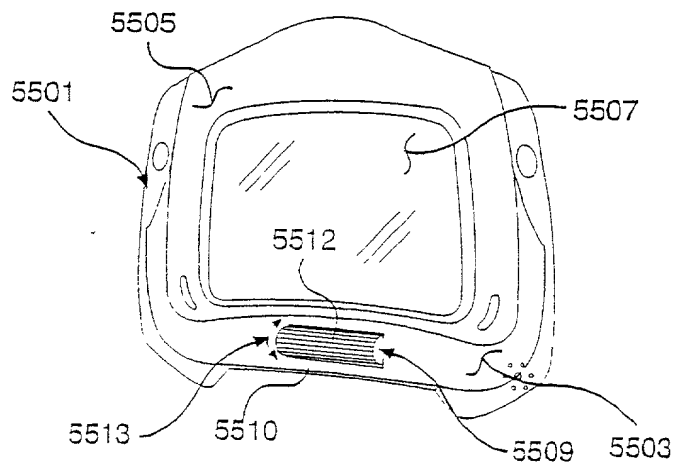
**Figure 7B**



**Figure 7C**



**Figure 7D**



**Figure 7E**

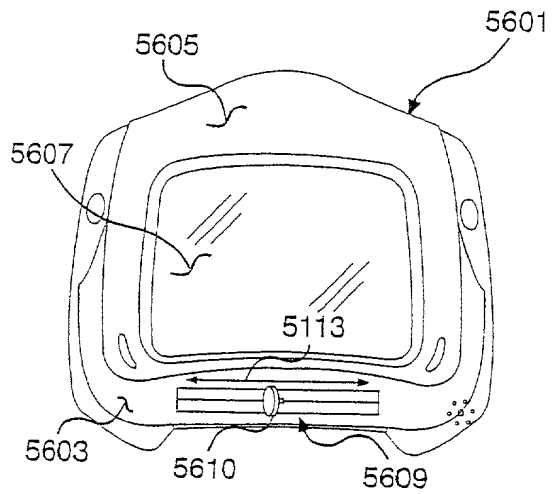


Figure 7F

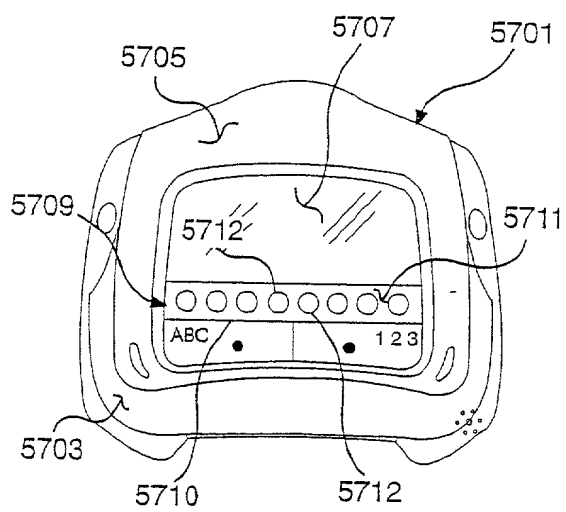


Figure 7G

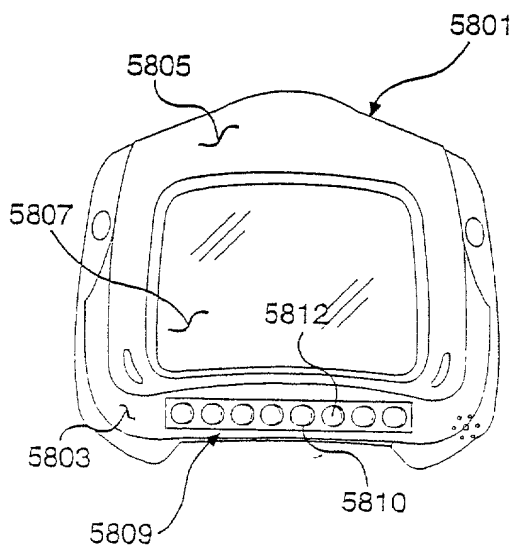


Figure 7H

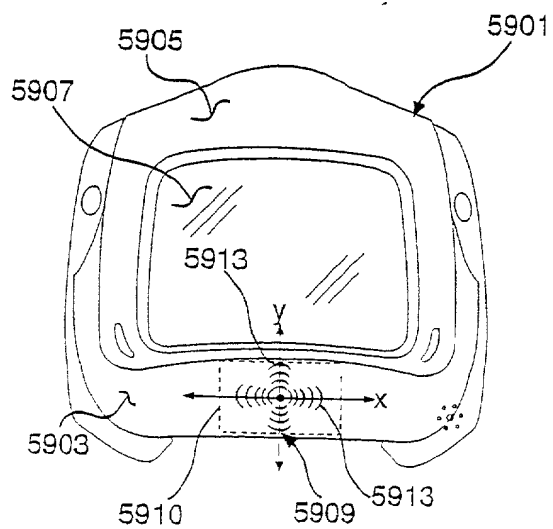


Figure 7I

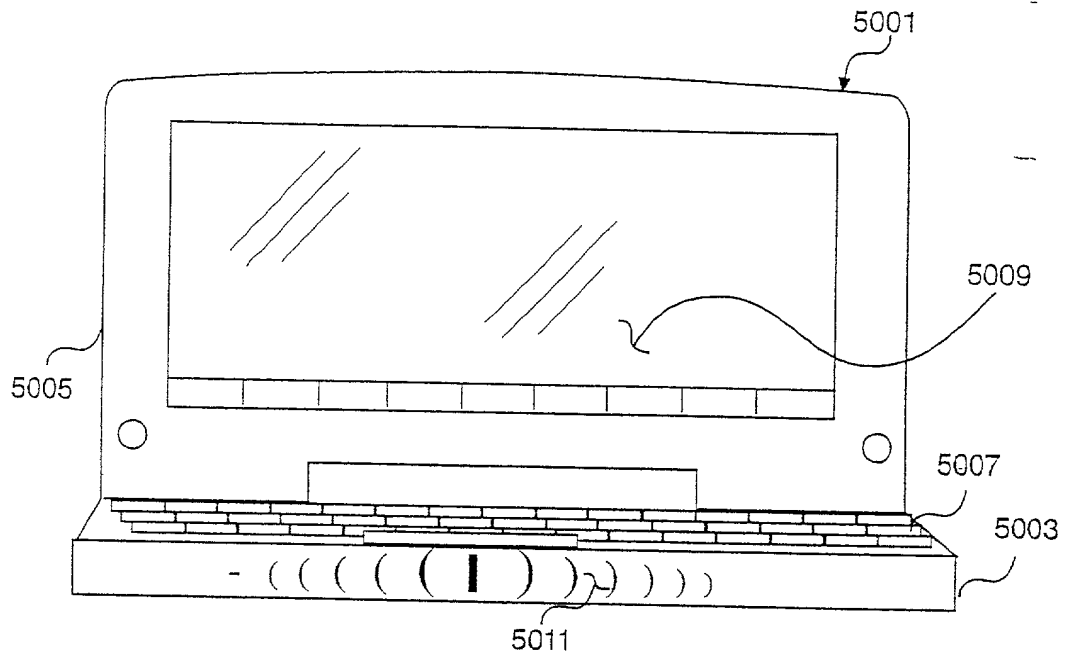


Figure 8A

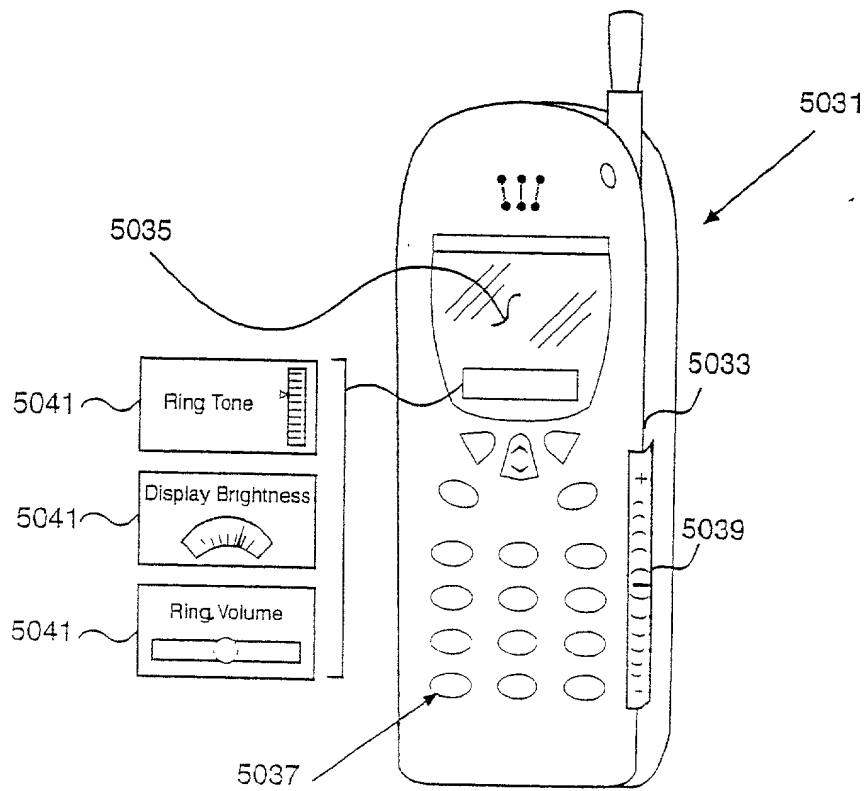


Figure 8B



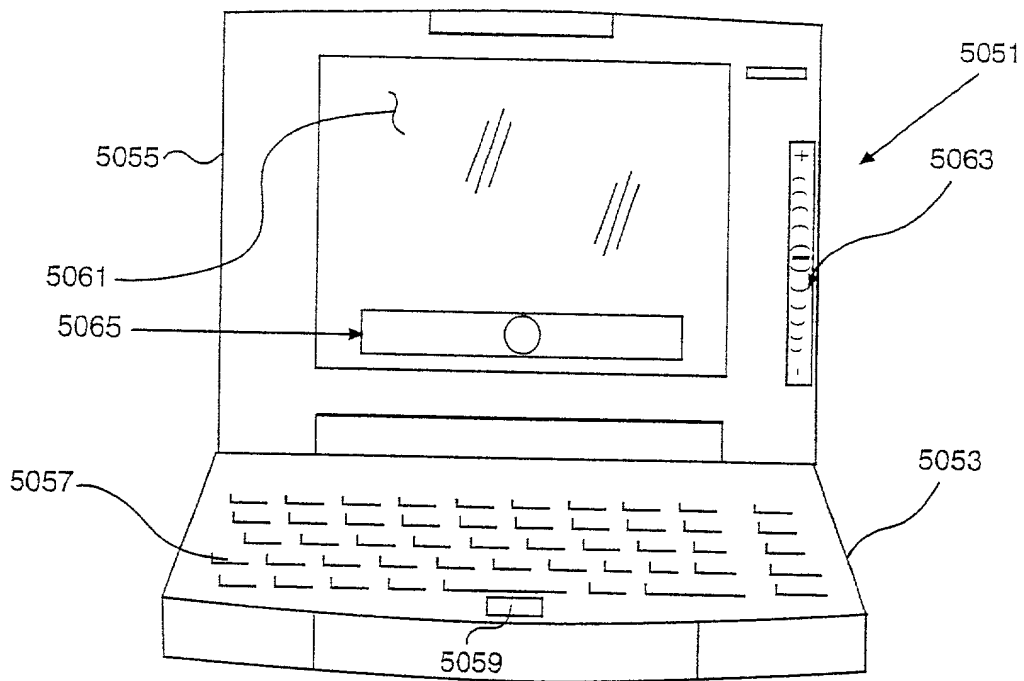


Figure 8C

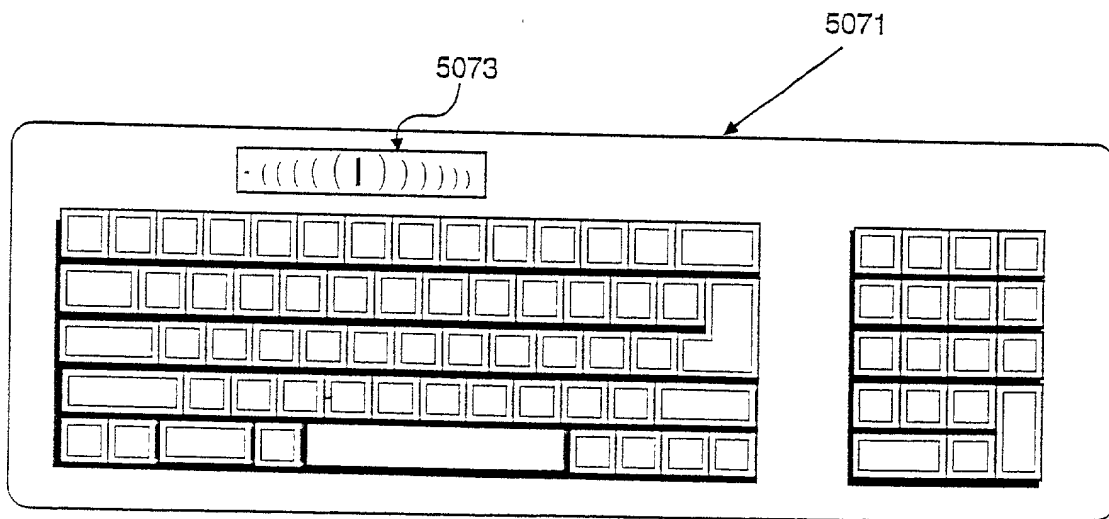


Figure 8D

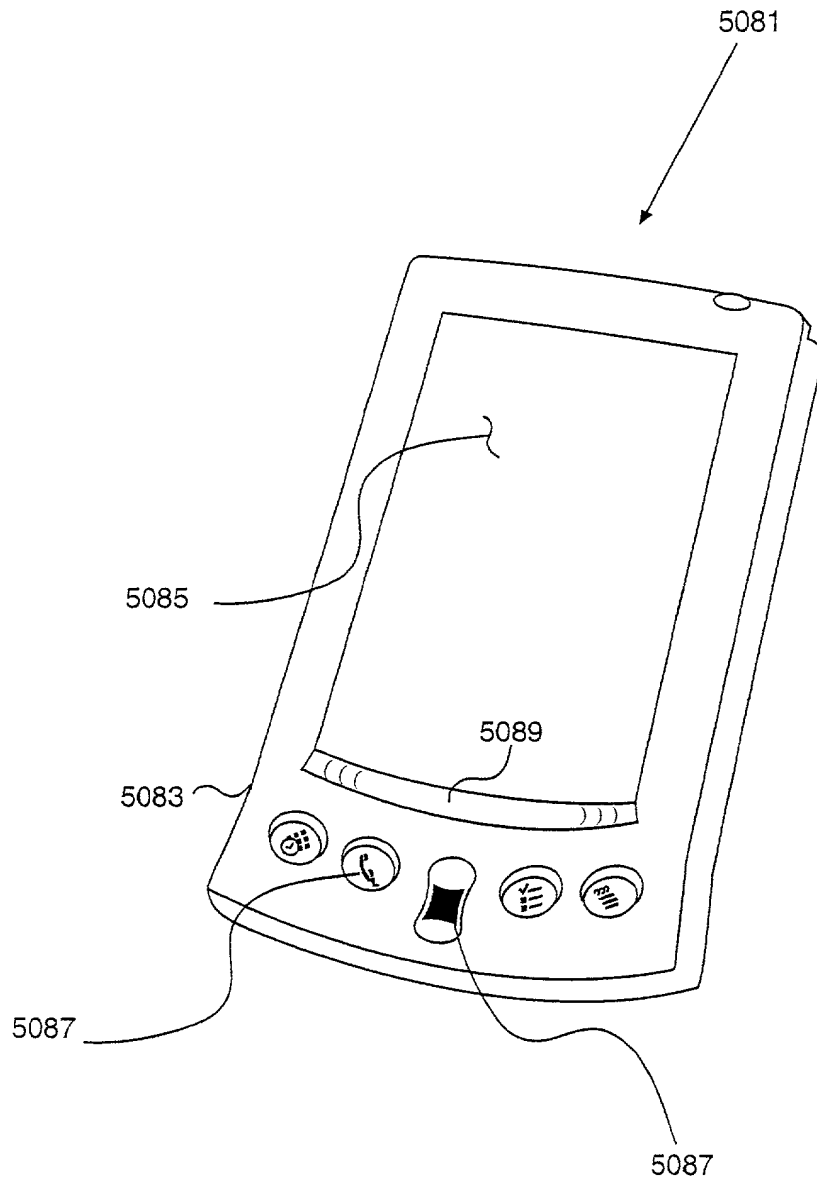


Figure 8E

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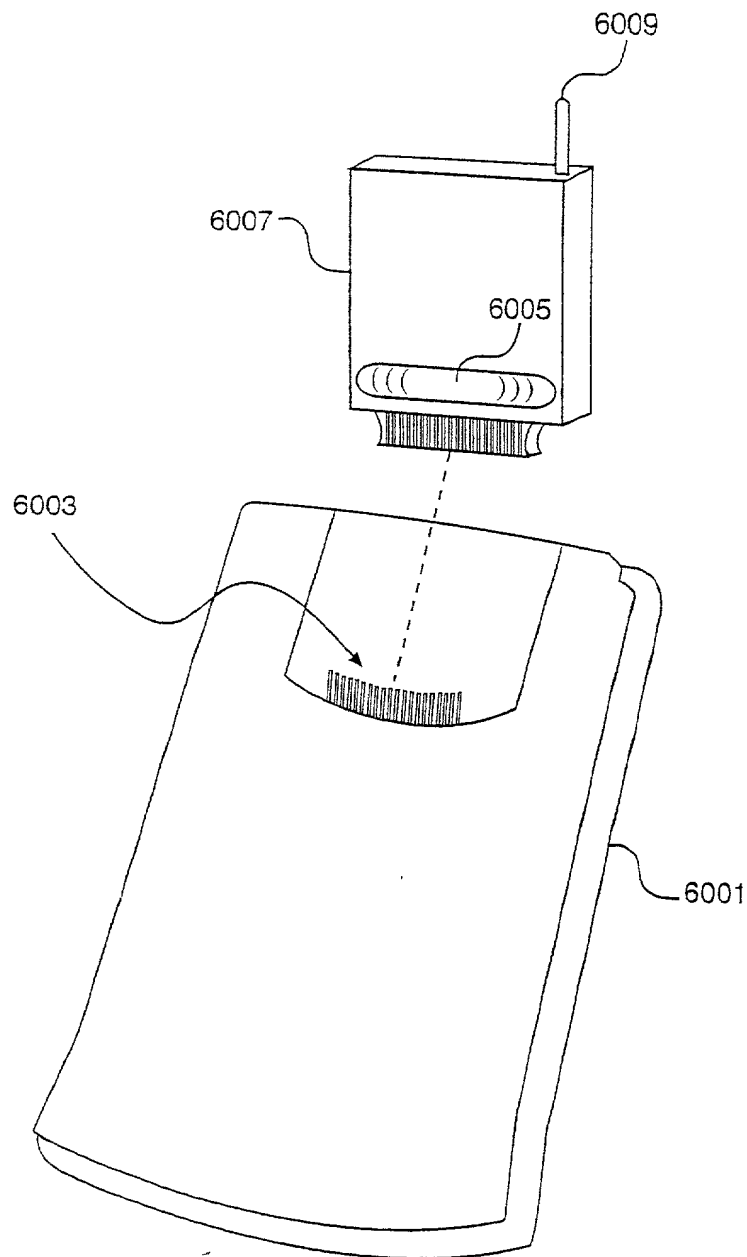


Figure 9

Age \* Sex Crosstabulation

Age	Male	Female	Total
12	154	133	287
13	154	161	315
14	155	116	271
15	131	133	264
16	100	98	198
17	104	117	221
18	80	60	140
19	10	9	19
Total	888	827	1715

Fig 10A

Race \* Sex Crosstabulation

Race		Male	Female	Total
White	N	783	714	1497
	%w/in race	52.30	47.70	100.00
Black	N	91	94	185
	%w/in race	49.19	50.81	100.00
Oriental	N	4	4	8
	%w/in race	50.00	50.00	100.00
American Indian	N	4		4
	%w/in race	100.00		100.00
Other	N	6	13	19
	%w/in race	31.58	68.42	100.00
Total	N	888	825	1713
	%w/in race	51.84	48.16	100.00

Fig 10B

# Thumb Length

Fig. 10C

	N	Mean	Std Dev	1st	5th	50th	95th	99th
Total Males	292	6.3	0.7	5.0	5.3	6.3	7.3	8.1
Total Females	285	6.0	0.5	4.8	5.1	5.9	6.8	7.1
Males 12-15	196	6.1	0.6	5.0	5.2	6.1	7.1	7.8
Males 16-19	96	6.7	0.6	5.5	5.9	6.7	7.5	
Females 12-15	198	5.9	0.5	4.7	5.0	5.9	6.8	7.0
Females 16-19	87	6.1	0.5	5.1	5.3	6.2	6.9	

## Thumb Length: Males

Fig 10D

Age	N	Mean	Std Dev	Percentiles				
				1st	5th	50th	95th	99th
12	46	5.7	0.4	4.9	5.0	5.7	6.3	
13	46	6.0	0.5	5.1	5.2	5.9	6.9	
14	54	6.2	0.6	5.1	5.2	6.1	7.3	
15	50	6.6	0.4	5.5	5.9	6.6	7.3	
16	31	6.6	0.4	5.7	5.9	6.6	7.1	
17	38	6.8	0.7	5.5	5.8	6.8	7.9	
18	25	6.8	0.4	6.2	6.2	6.9	7.5	
19	2	7.6	0.8	7.0	7.0	7.6		

## Thumb Length: Females

Fig. 10E

Age	Valid N	Mean	Std Dev	Percentiles				
				1st	5th	50th	95th	99th
12	48	5.7	0.5	4.7	4.9	5.8	6.5	
13	61	5.9	0.5	4.6	4.9	5.8	6.6	
14	44	5.9	0.5	4.8	5.0	5.9	6.9	
15	45	6.1	0.4	5.4	5.4	6.0	6.9	
16	25	6.2	0.5	5.1	5.2	6.3	7.1	
17	42	6.0	0.5	5.1	5.2	6.0	7.0	
18	16	6.2	0.3	5.7	5.7	6.2		
19	4	6.1	0.3	5.7	5.7	6.1		

Fig 10F

Correlations: Total

		THUMB LENGTH	HAND LENGTH
THUMB LENGTH	Pearson Correlation	1	0.770
	Sig. (2-tailed)**	.	0.000
	N	577	576
HAND LENGTH	Pearson Correlation	0.770	1
	Sig. (2-tailed)**	0.000	.
	N	576	1707
** Correlation is significant at the 0.01 level (2-tailed)**.			

Fig 10G

Correlations: Male

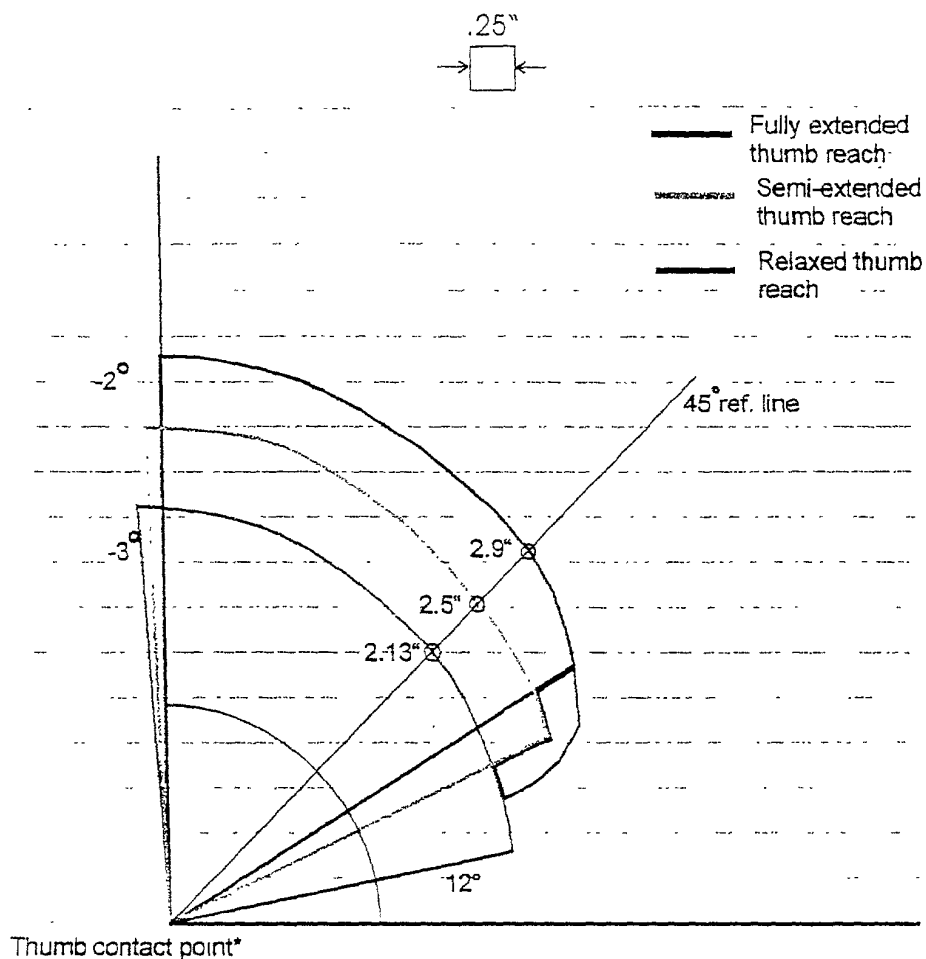
		THUMB LENGTH	HAND LENGTH
THUMB LENGTH	Pearson Correlation	1	0.790
	Sig. (2-tailed)**	.	0.000
	N	292	291
HAND LENGTH	Pearson Correlation	0.790	1
	Sig. (2-tailed)**	0.000	.
	N	291	882
** Correlation is significant at the 0.01 level (2-tailed)**.			

Correlations: Female

		THUMB LENGTH	HAND LENGTH
THUMB LENGTH	Pearson Correlation	1	0.657
	Sig. (2-tailed)**	.	0.000
	N	285	285
HAND LENGTH	Pearson Correlation	0.657	1
	Sig. (2-tailed)**	0.000	.
	N	285	825
** Correlation is significant at the 0.01 level (2-tailed)**.			

Fig 10H

230510 " 24000000

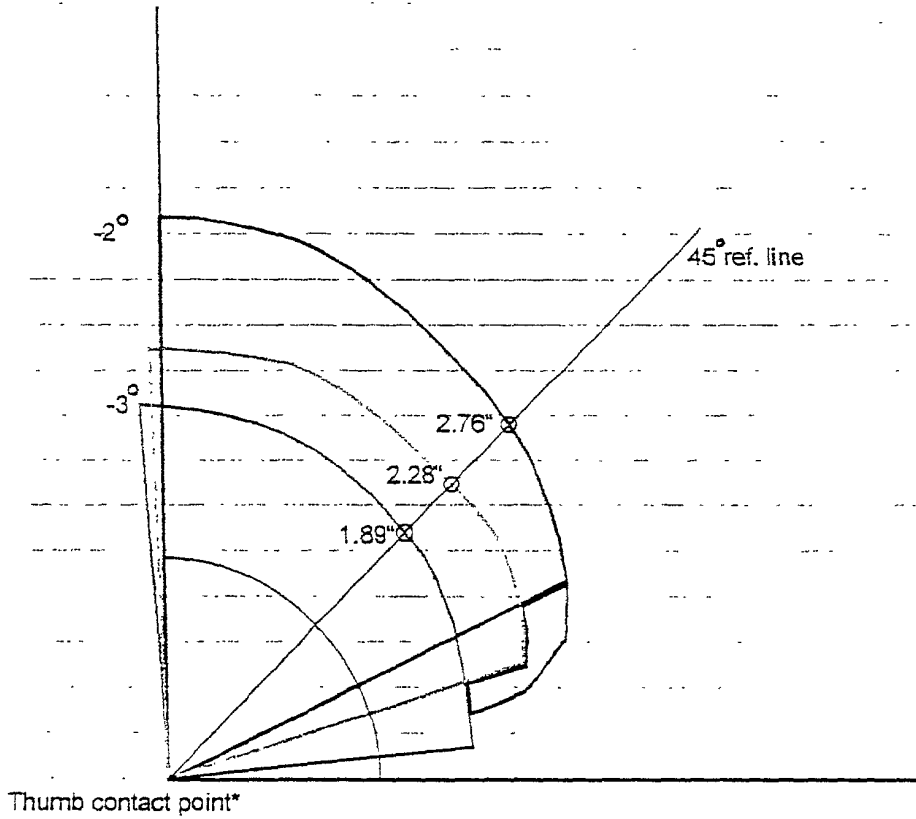
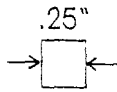


1st Percentile Left Thumb Sweeps, Females Age 12-19  
(Uniform object thickness 0.75", **corner radius 1.5"**)  
Note: each data point represents thumb tip at centerline of thumb

\* Located vertically over point of thumb base contact with corner,  
at midpoint of lower corner radius on device

Fig 10I

C23



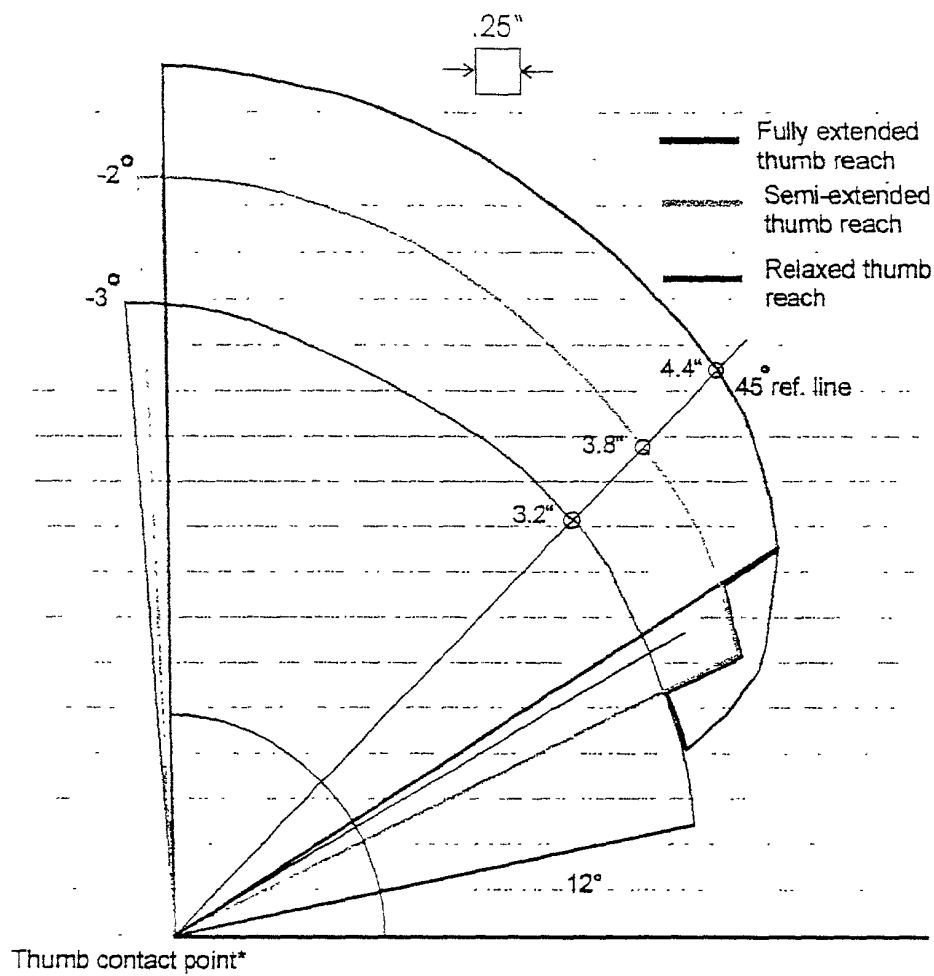
1st Percentile Left Thumb Sweeps, Females Age 12-19  
(Uniform object thickness 0.75", corner radius 0.75")

\* Located vertically over point of thumb base contact with corner,  
at midpoint of lower corner radius on device

Fig 10J

C24





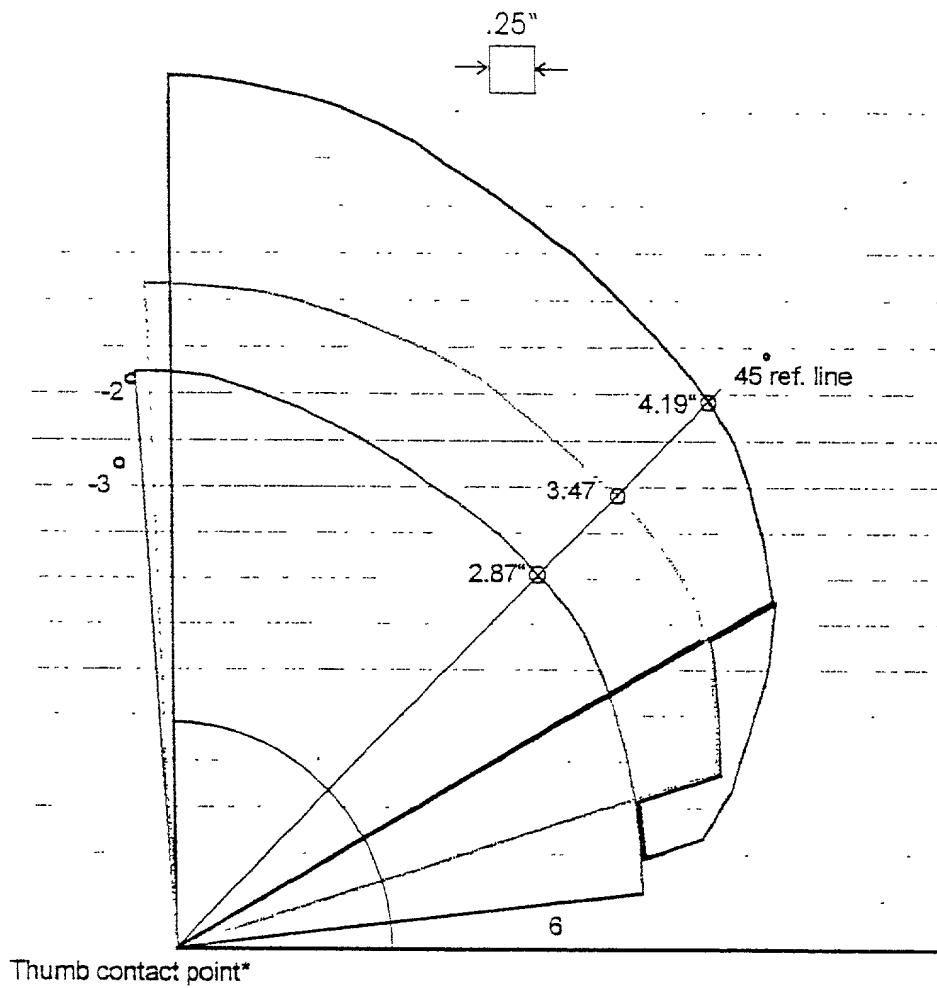
95th Percentile Left Thumb Sweeps, Male Age 12-19  
(Uniform object thickness 0.75", **corner radius 1.5"**)

Note: each data point represents thumb tip at centerline of thumb

\* Located vertically over point of thumb base contact with corner, at midpoint of lower corner radius on device

Fig 10K

C25



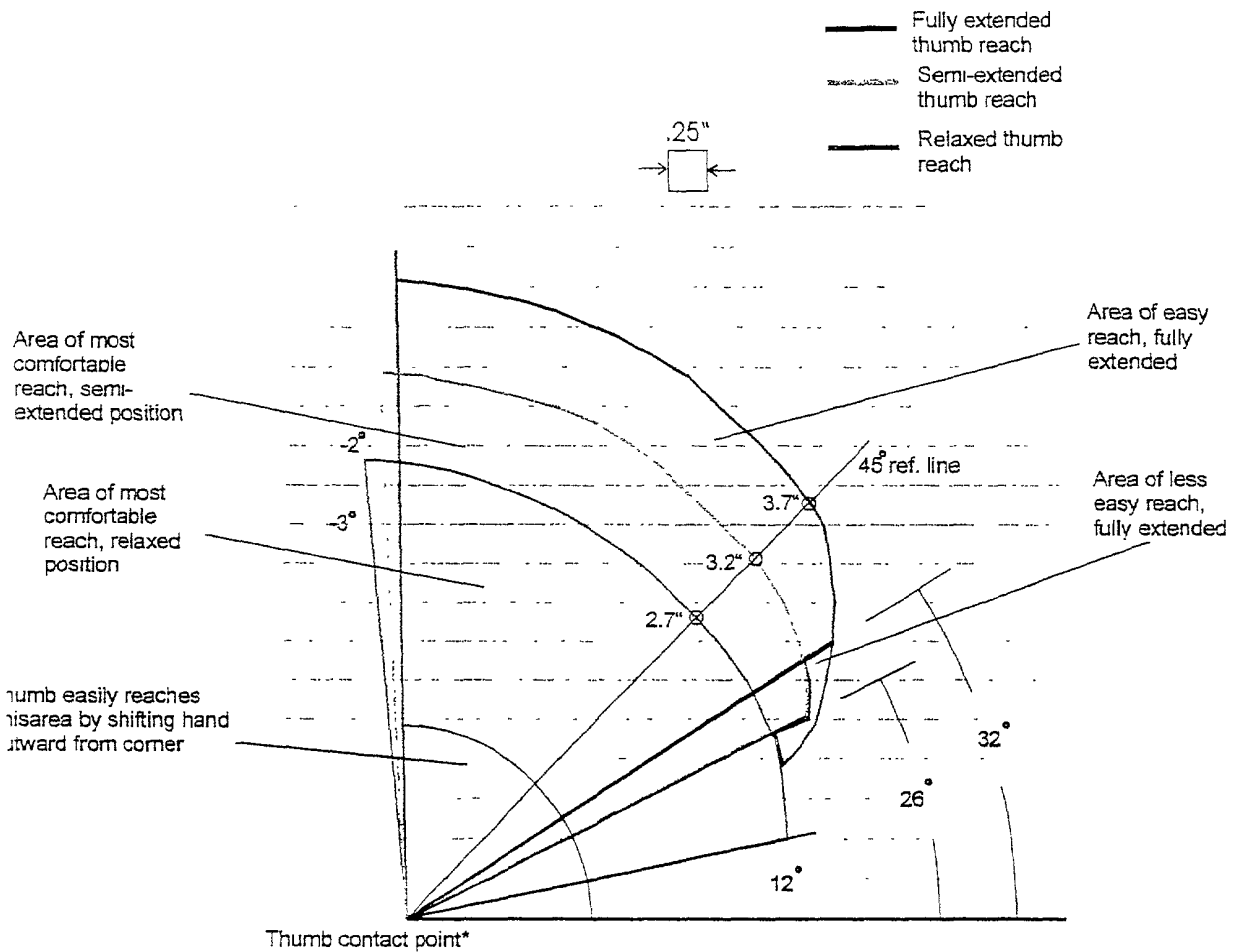
95th Percentile Left Thumb Sweeps, Male Age 12-19  
(Uniform object thickness 0.75", corner radius 0.75")

\* Located vertically over point of thumb base contact with corner,  
at midpoint of lower corner radius on device

Fig 10L

C26

2025 RELEASE UNDER E.O. 14176



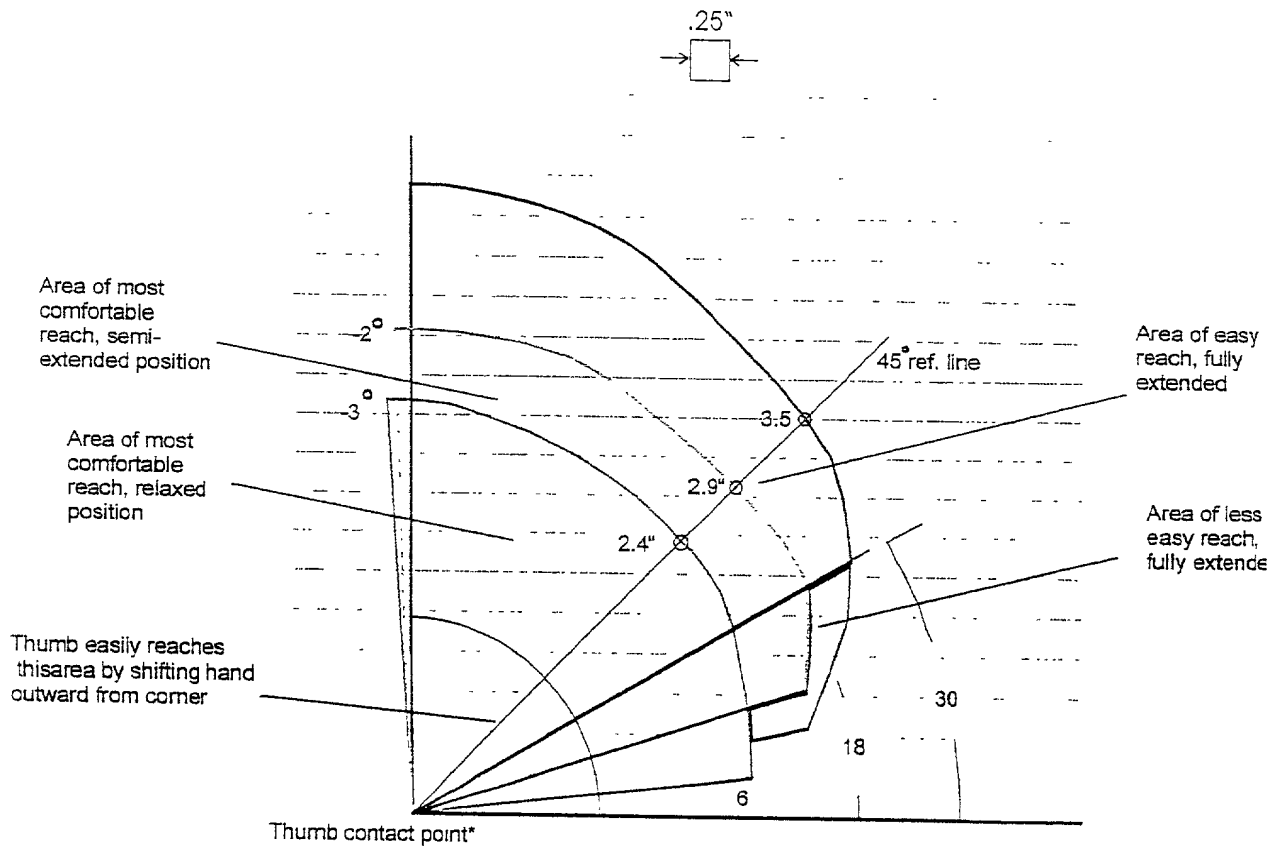
50th Percentile Left Thumb Sweeps, M+F Age 12-19  
(Uniform object thickness 0.75", corner radius 1.5")

Note: Each data point represents thumb tip at centerline of thumb

\* Located vertically over point of thumb base contact with corner.  
at midpoint of lower corner radius on device

Fig 10M

C27

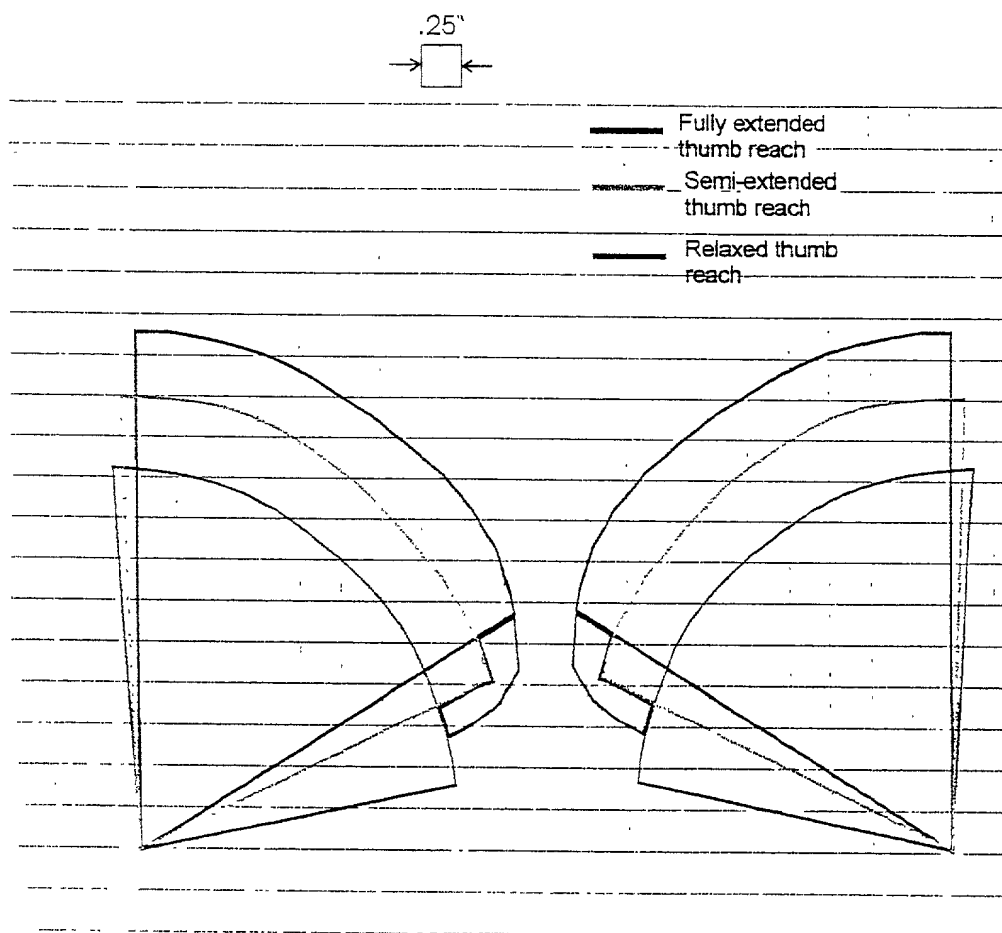


50th Percentile Left Thumb Sweeps, M+F Age 12-19  
(Uniform object thickness 0.75", corner radius 0.75")

\* Located vertically over point of thumb base contact with corner,  
at midpoint of lower corner radius on device

Fig 10N

C 28



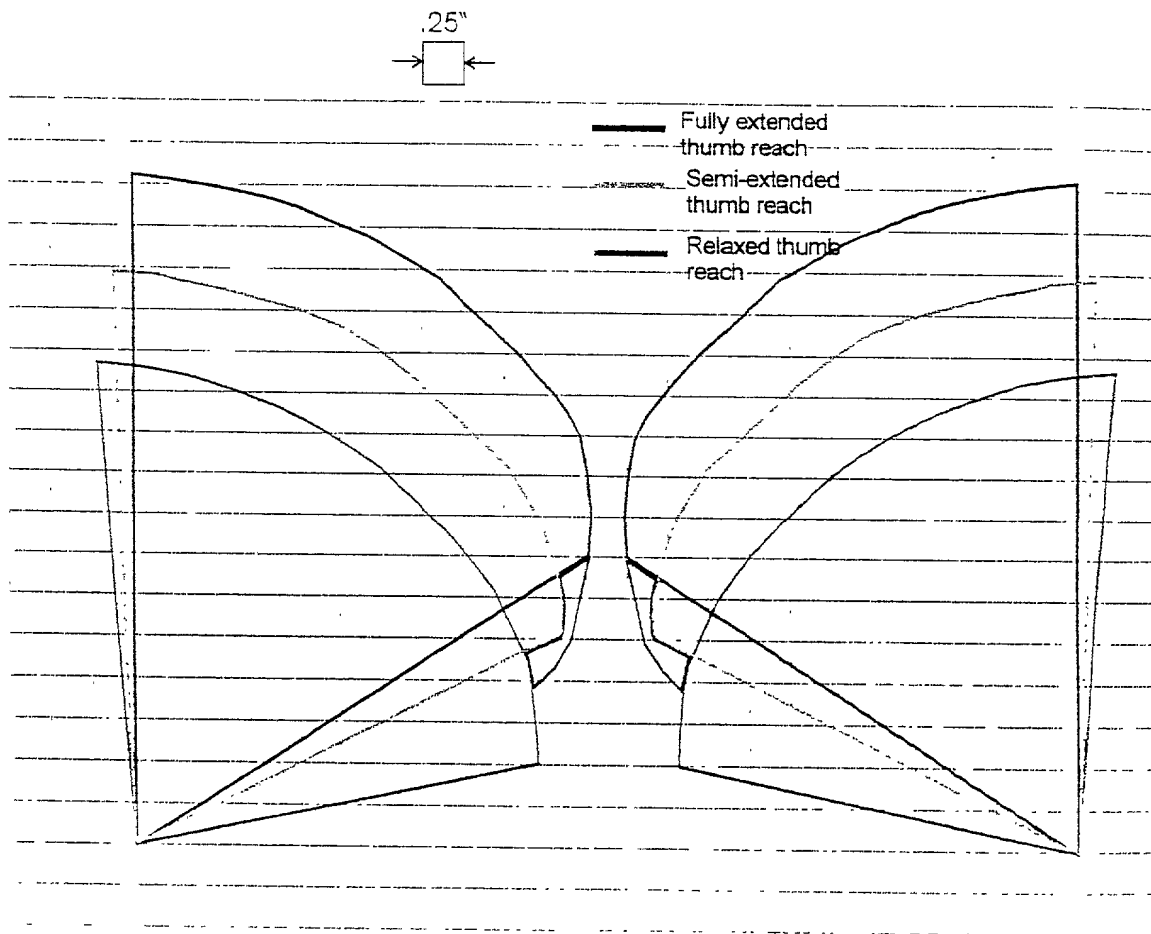
1st Percentile Combined Thumb Sweeps, Females Age 12-19  
 (Uniform object thickness 0.75", **corner radius 1.5"**)

Note: each data point represents thumb tip at centerline of thumb

\* Located vertically over point of thumb base contact with corner,  
 at midpoint of lower corner radius on device

Fig 100

C29



50th Percentile Combined Thumb Sweeps, Male+Females Age 12-19  
(Uniform object thickness 0.75", corner radius 1.5")

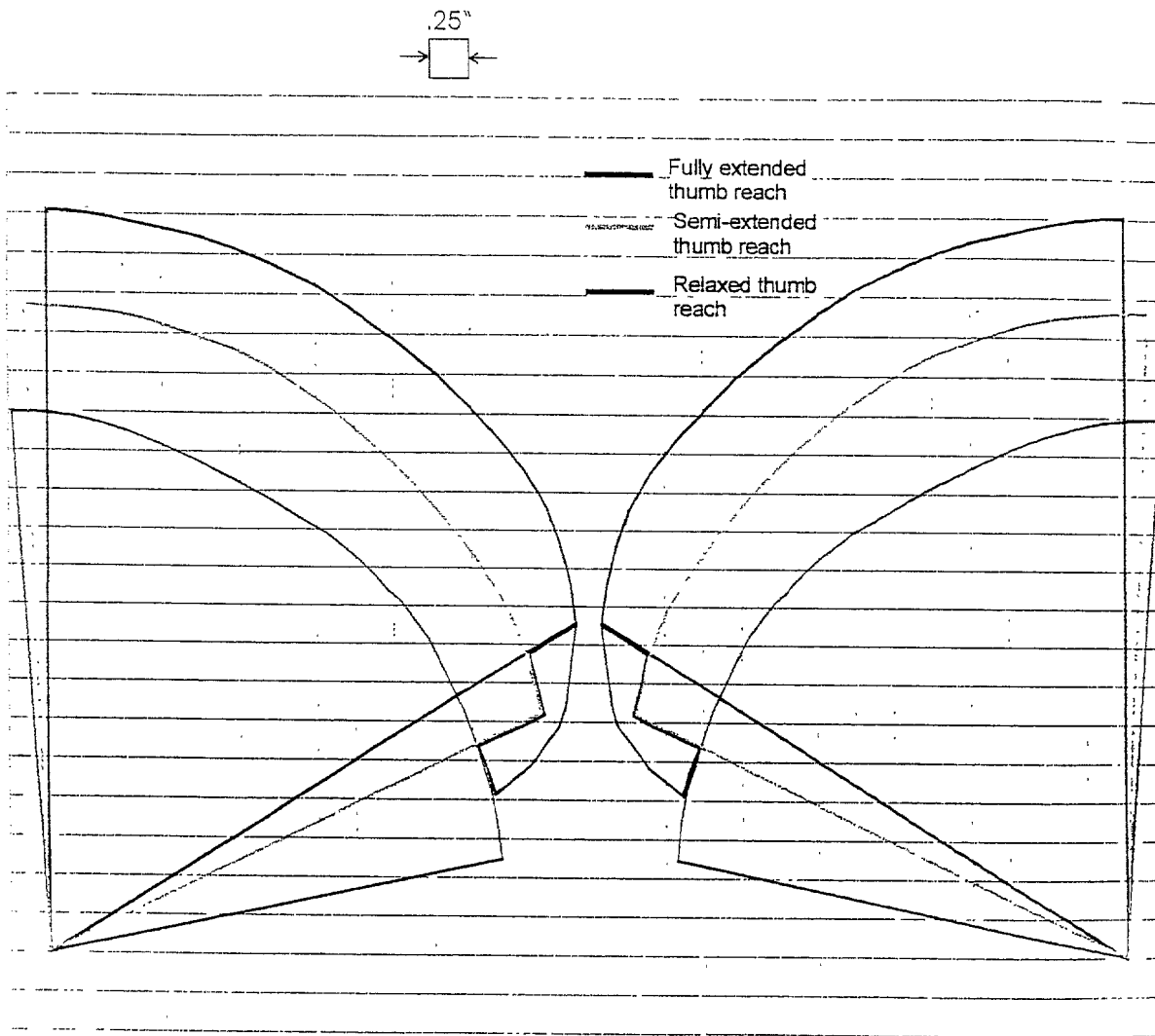
Notes: Each data point represents thumb tip at centerline of thumb  
Left and right thumb envelopes are arbitrarily placed relative to each other  
to permit cutting or measurements without overlapped reach lines

\* Located vertically over point of thumb base contact with corner,  
at midpoint of lower corner radius on device

Fig 10A

C30

95th Percentile Combined Thumb Sweeps, Males Age 12-19



95th Percentile Combined Thumb Sweeps, Males Age 12-19  
(Uniform object thickness 0.75", corner radius 1.5")

Notes: Each data point represents thumb tip at centerline of thumb  
Left and right thumb envelopes are arbitrarily placed relative to each other  
to permit cutting or measurements without overlapped reach lines

\* Located vertically over point of thumb base contact with corner,  
at midpoint of lower corner radius on device

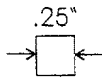
Fig 10Q

C31

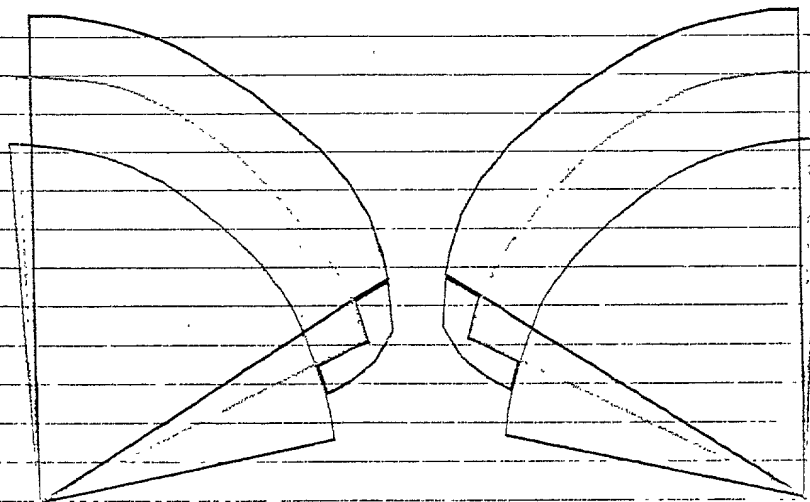
C32







— Fully extended thumb reach  
 - - - Semi-extended thumb reach  
 — Relaxed thumb reach



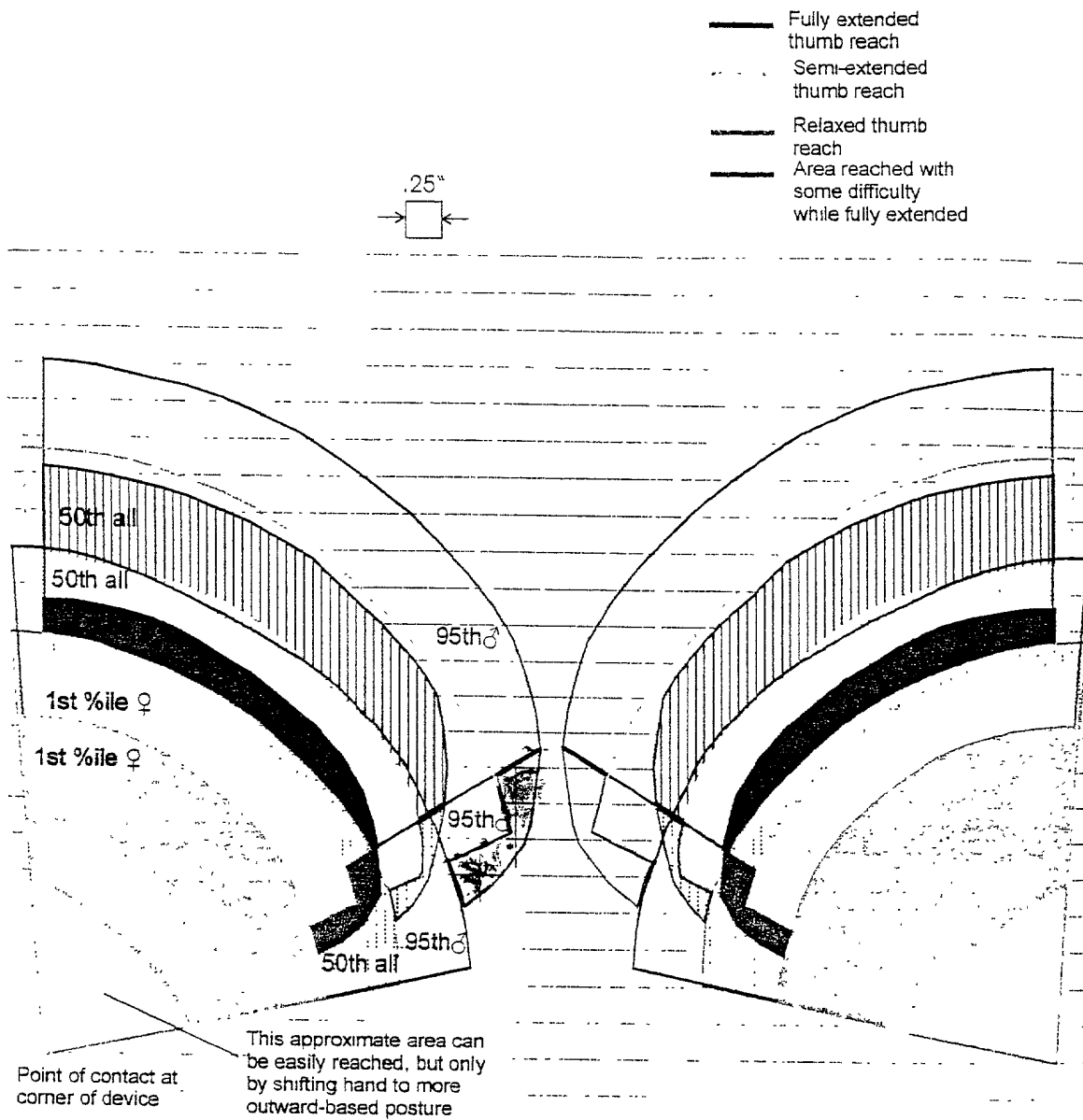
1st Percentile Combined Thumb Sweeps. Females Age 12-19  
 (Uniform object thickness 0.75", **corner radius 1.5"**)

Notes: Each data point represents thumb tip at centerline of thumb  
 Left and right thumb envelopes are arbitrarily placed relative to each other  
 to permit cutting of measurements without overlapped reach lines

Fig 10T

C34

035 P 01 20000503



Combined Thumb Sweeps, 1st Percentile Females Through 95th Percentile Males Age 12-19

(Uniform object thickness 0.75", corner radius 1.5")

Notes: Each data point represents thumb tip at centerline of thumb  
Left and right thumb envelopes are arbitrarily placed relative to each other  
to permit cutting or measurements without overlapped reach lines

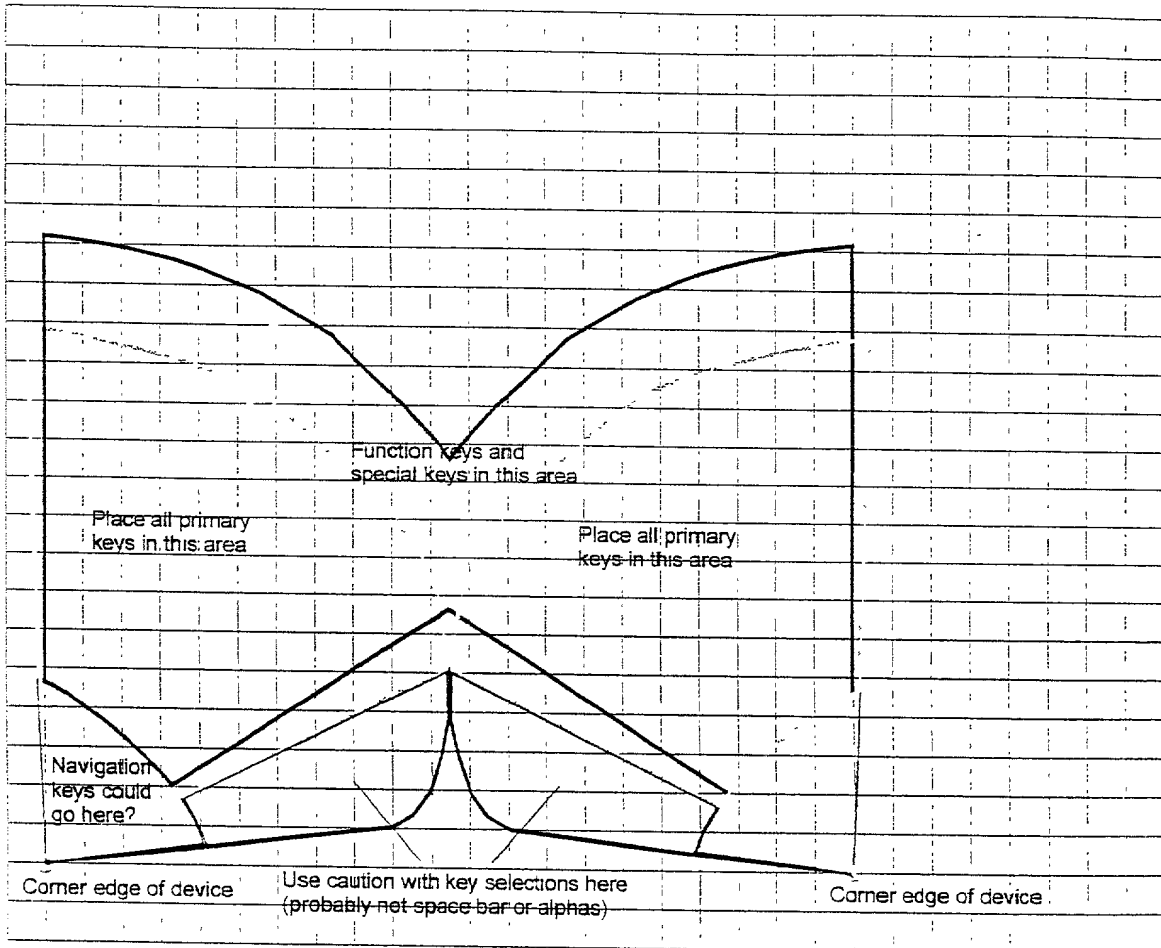
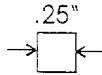
Fig 104

Located vertically over point of thumb base contact with corner,  
at midpoint of lower corner radius on device

035

Fig 10V

C36



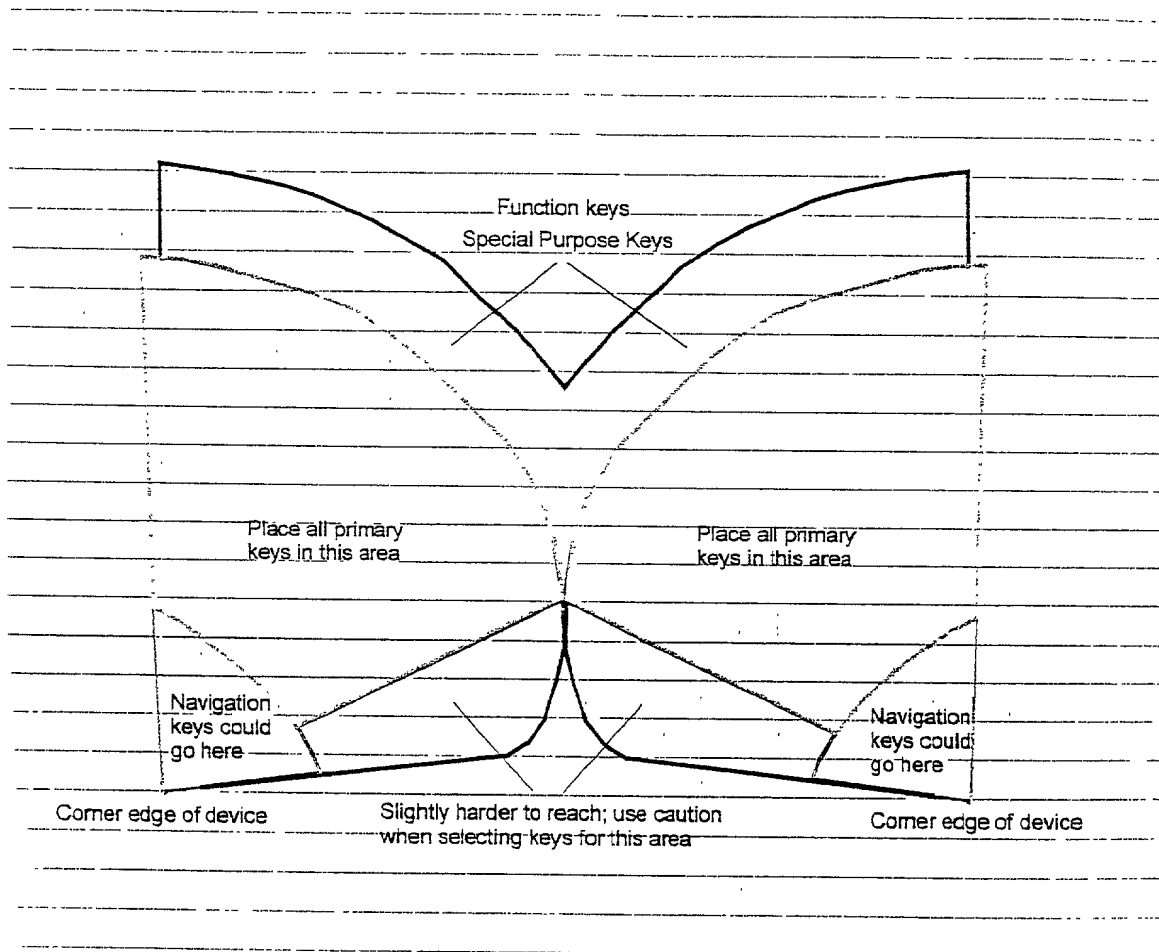
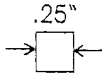
### Key Placement Guidelines

(Uniform object thickness 0.75", corner radius 1.5")

Using 50th percentile semi-extended reach for primary keying area

Fig 10W

C37



### Key Placement Guidelines

Device thickness 0.75" (uniform), corner radius 1.5" (plan view), corner radius approx. 1.0" (side view)

#### Notes:

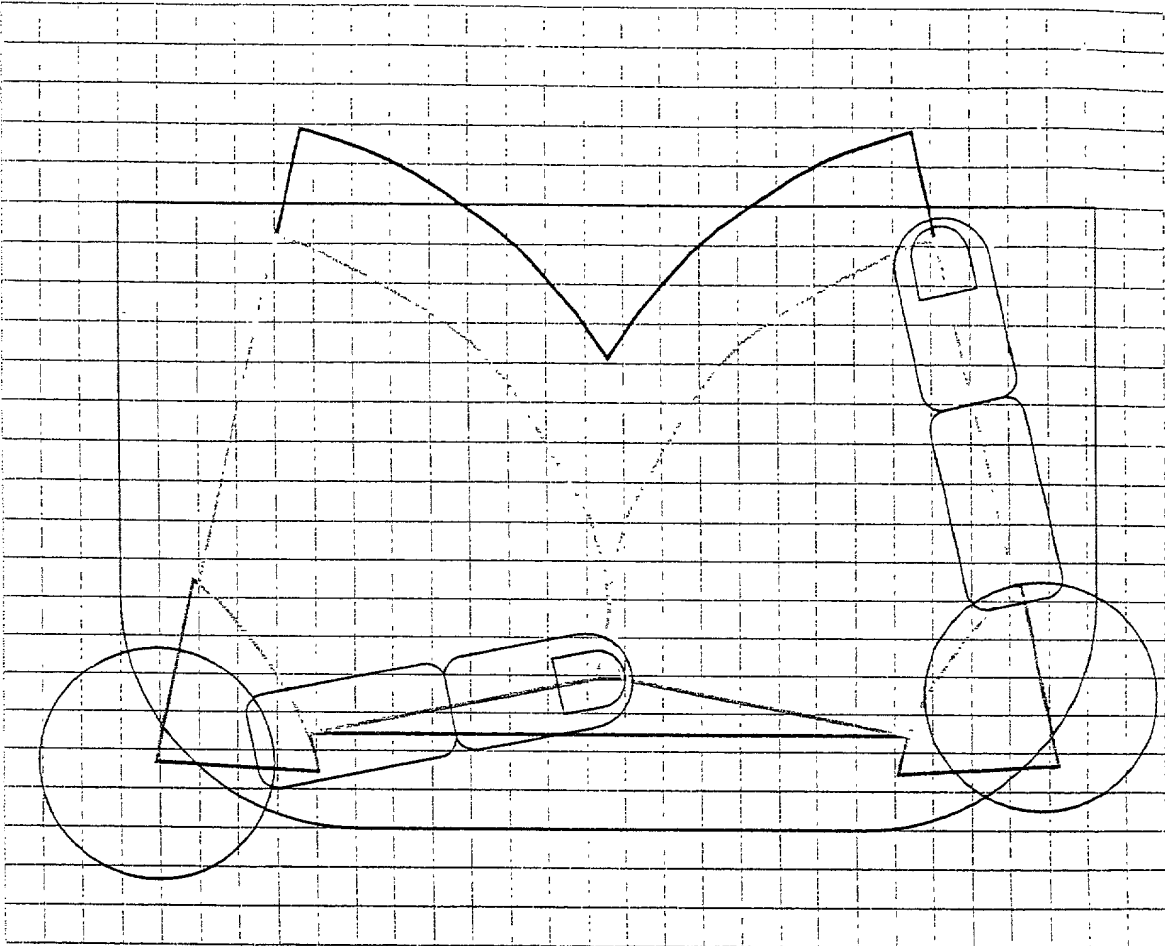
- For device thickness of 0.75 in., keying area width is approx. 5.5 in.
- Reach areas are valid for placement of thumbs at corner or along sides
- Smaller corner radii decrease reach areas but permit easier reach into blue areas
- Device thicknesses greater than 0.75 in. quickly decrease size of reach areas
- Reach plots generally indicate a device width of approx. 6.0 in.

Fig 10 X

C38

.25"

Ref. from Fig. 10



Combined male and female

1. Used reach envelope of 50% woman with relaxed grip (not pick or extended reach).
2. Drew geometry to represent the approx dims of 50% woman. Circle represents the palm at the base and crotch of the thumb.
3. Rotated the reach envelope approx  $15^\circ$  to more closely resemble the hand posture of holding a game controller.

Fig 10Y

C39

## Automated Wrapping Process

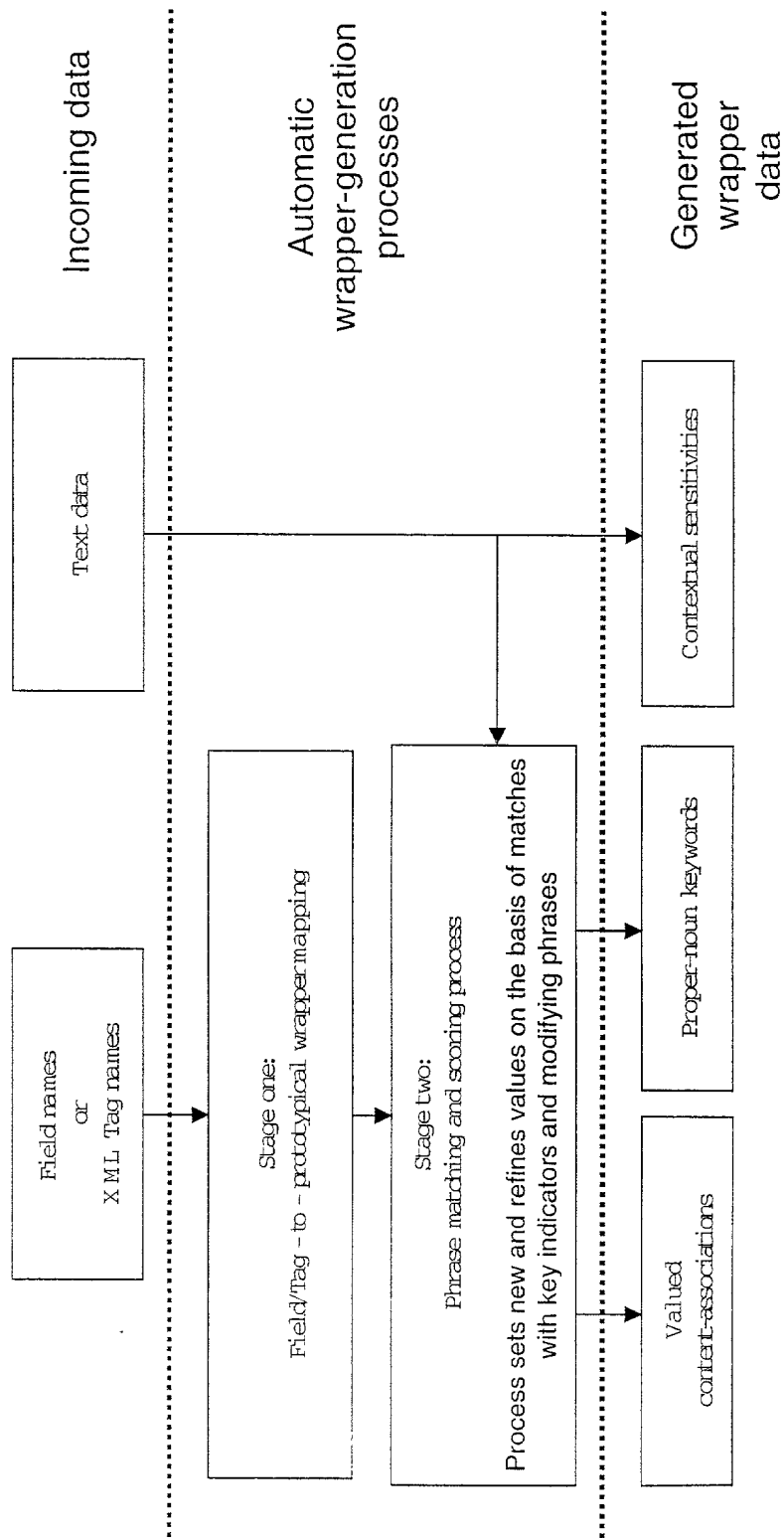


Figure 11



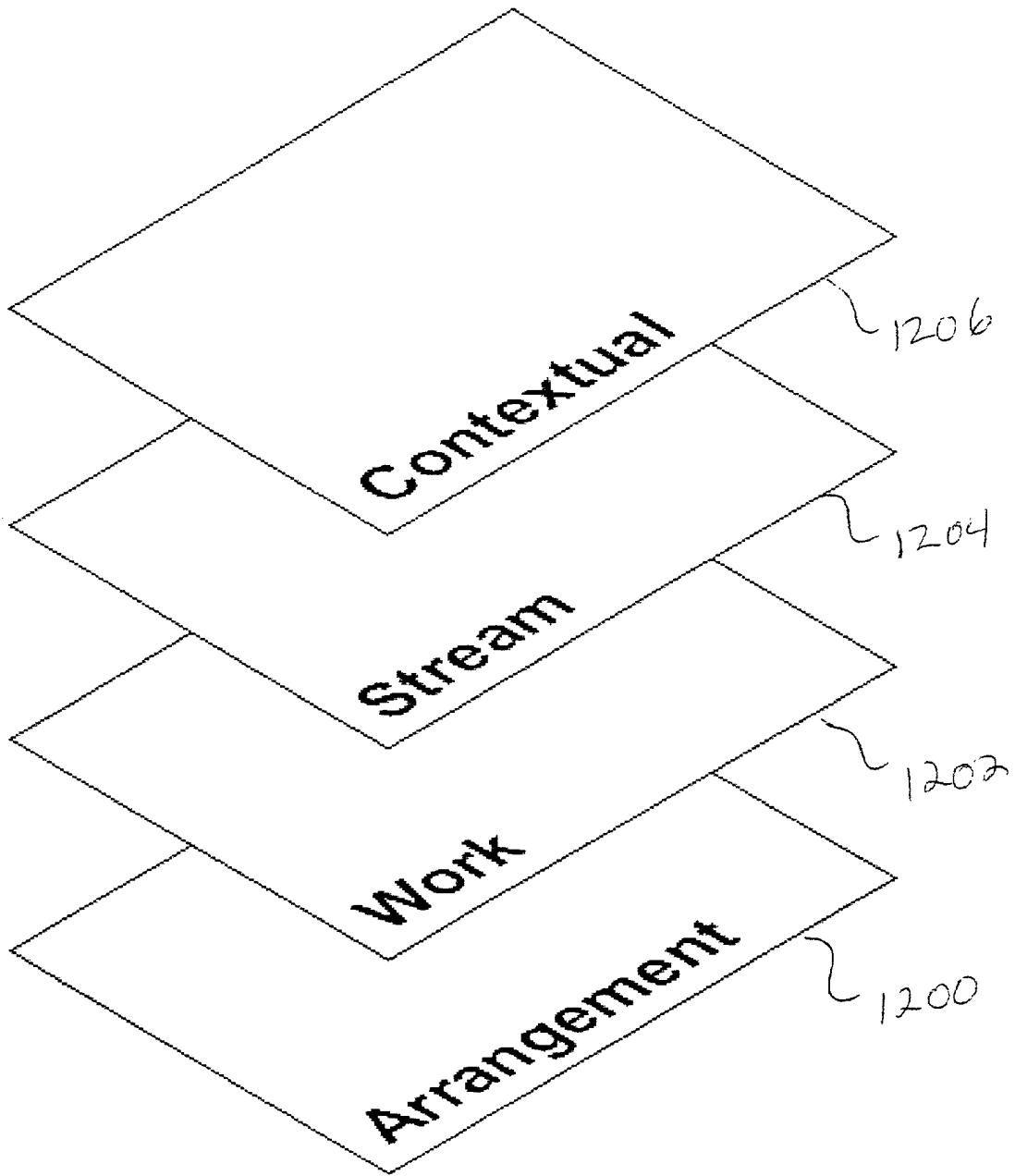


Fig. 12

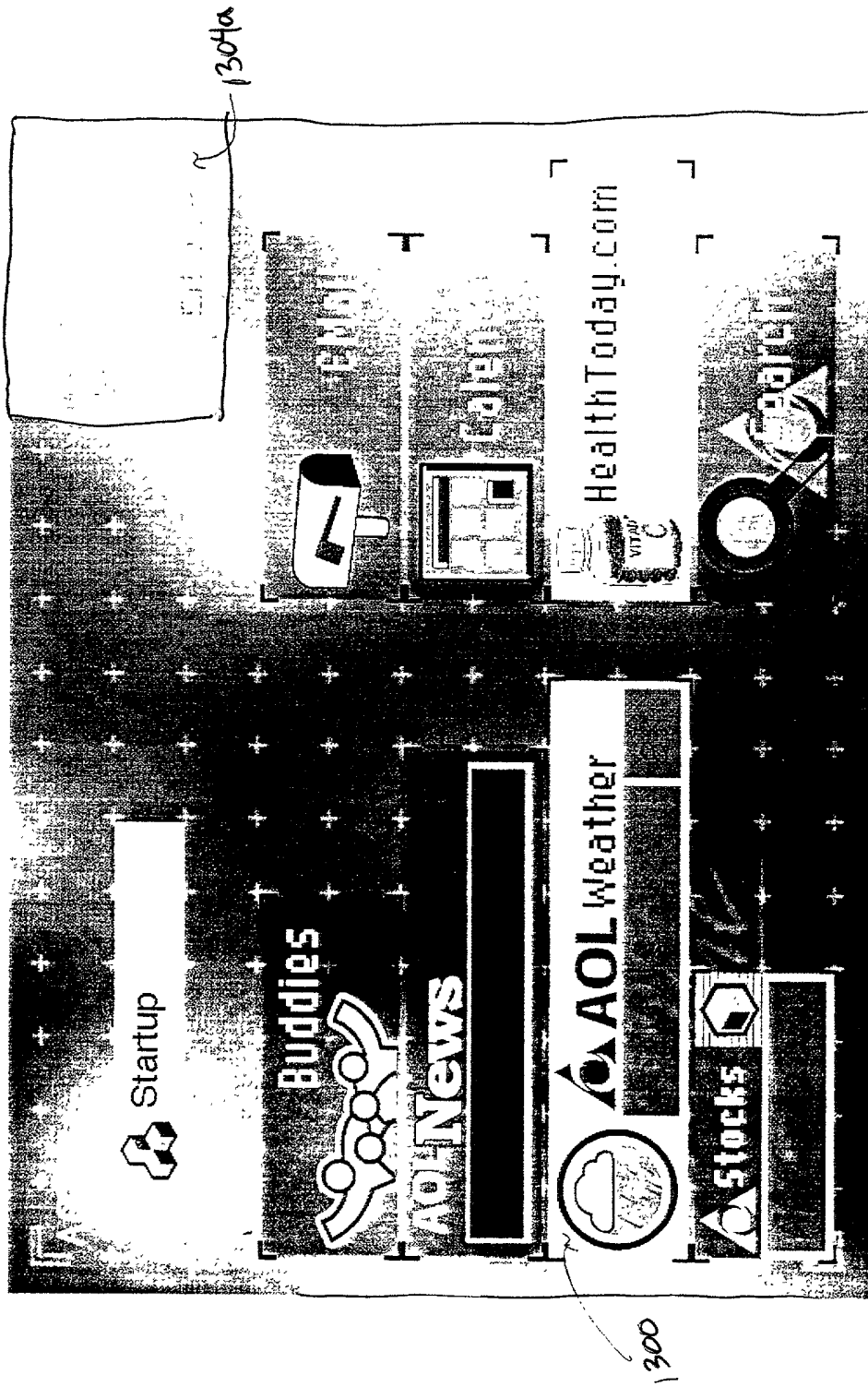


Fig. 13A

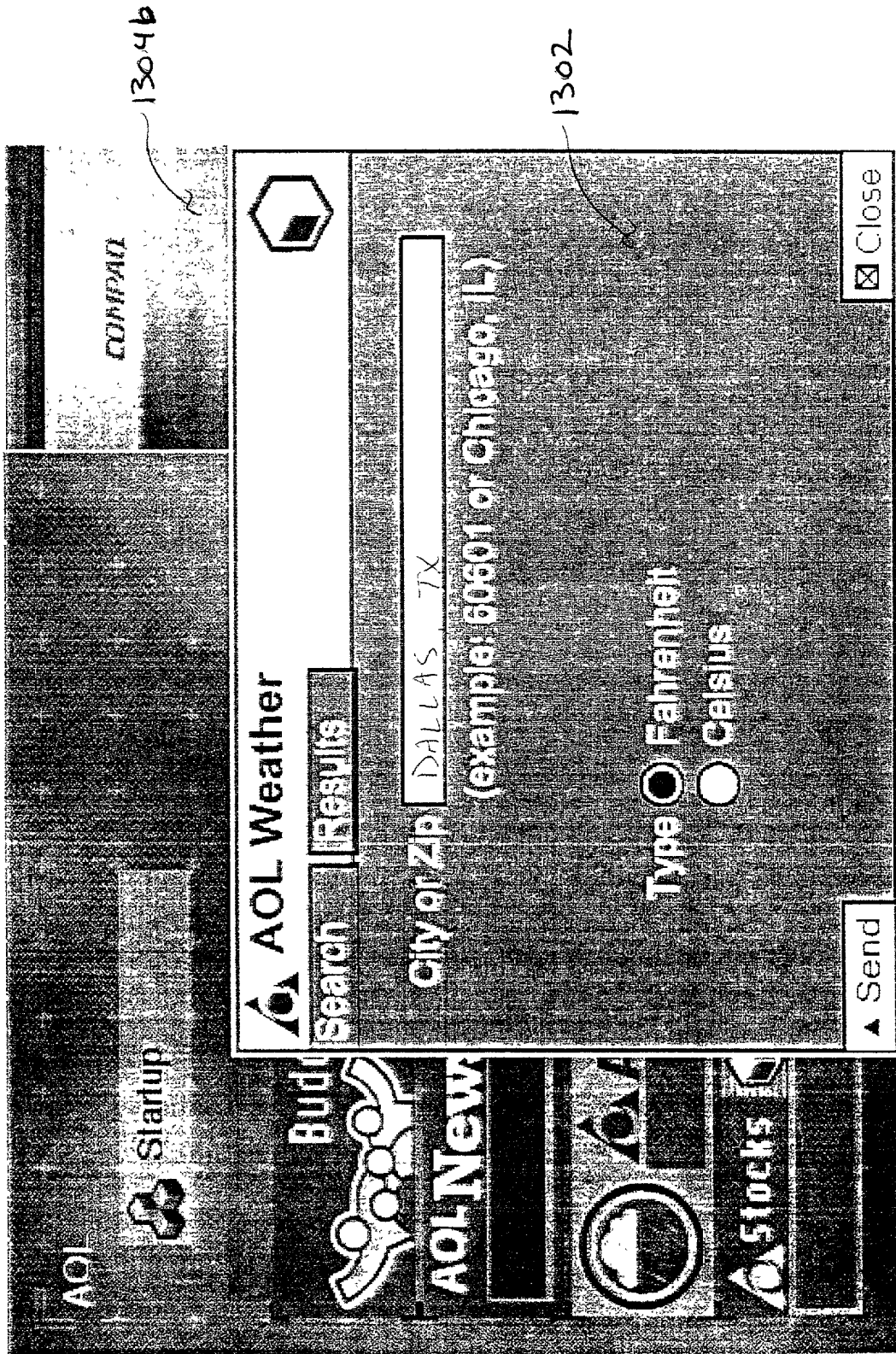


Fig 13B

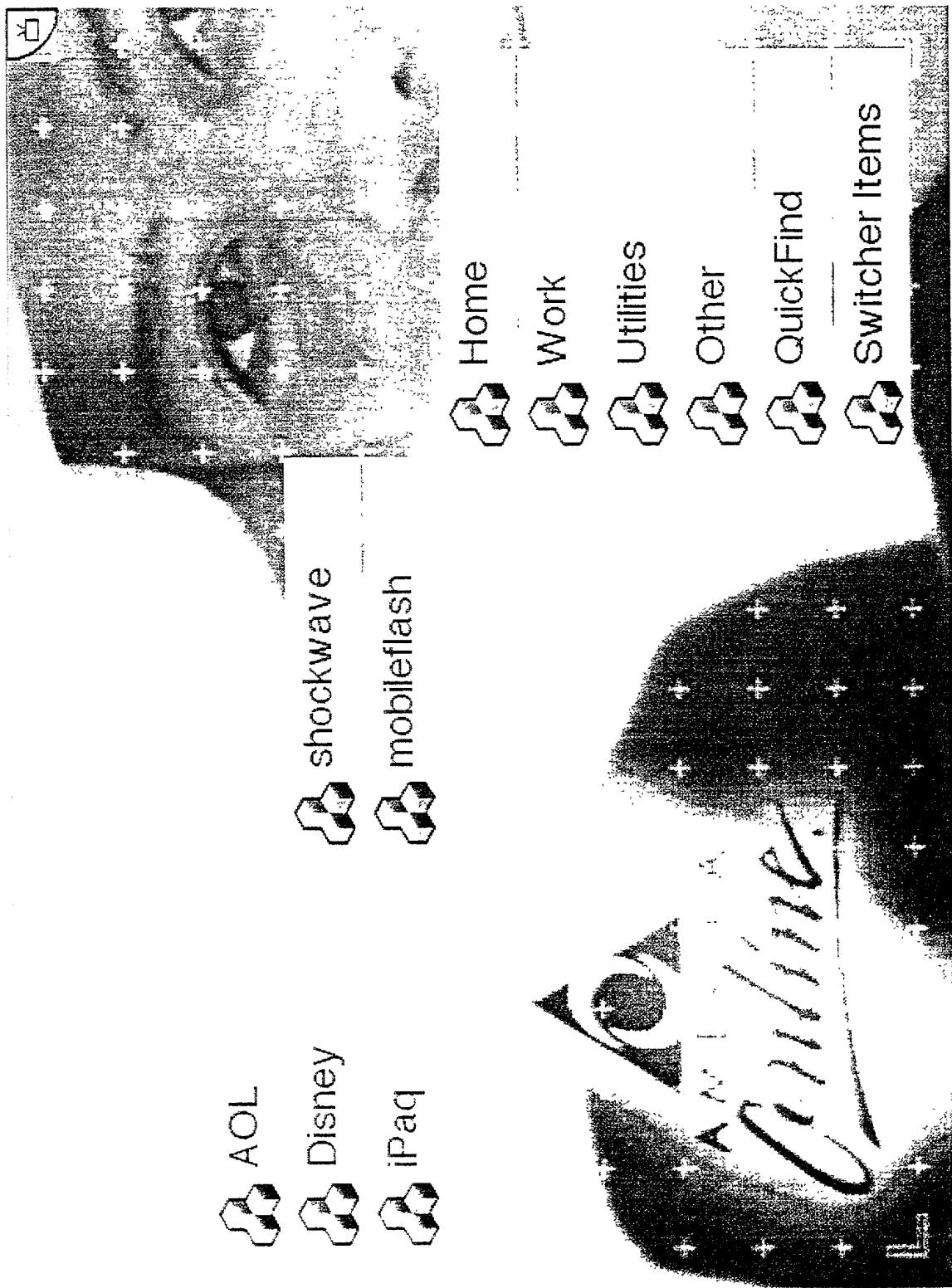


Fig 14A

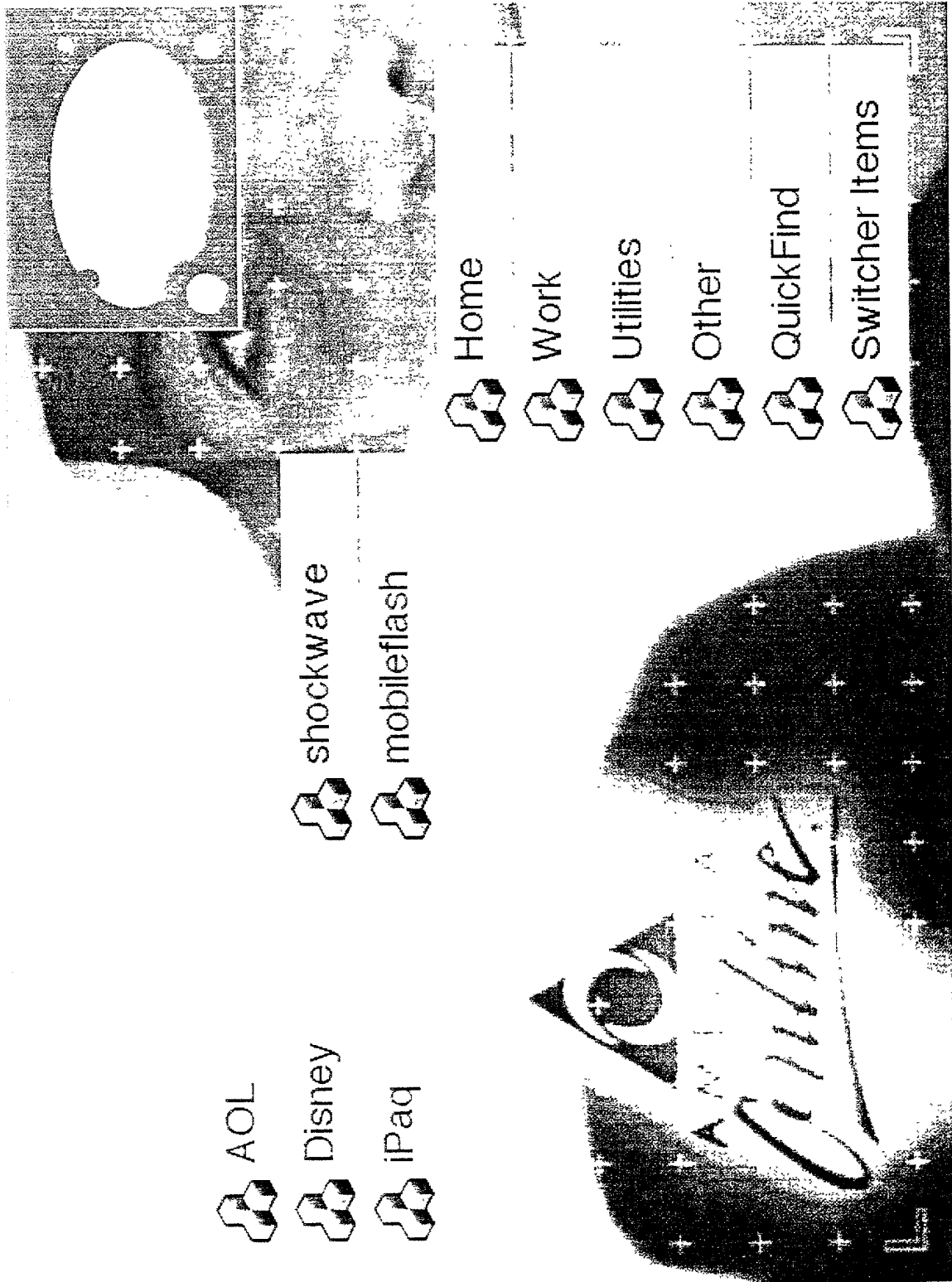


Fig 14B

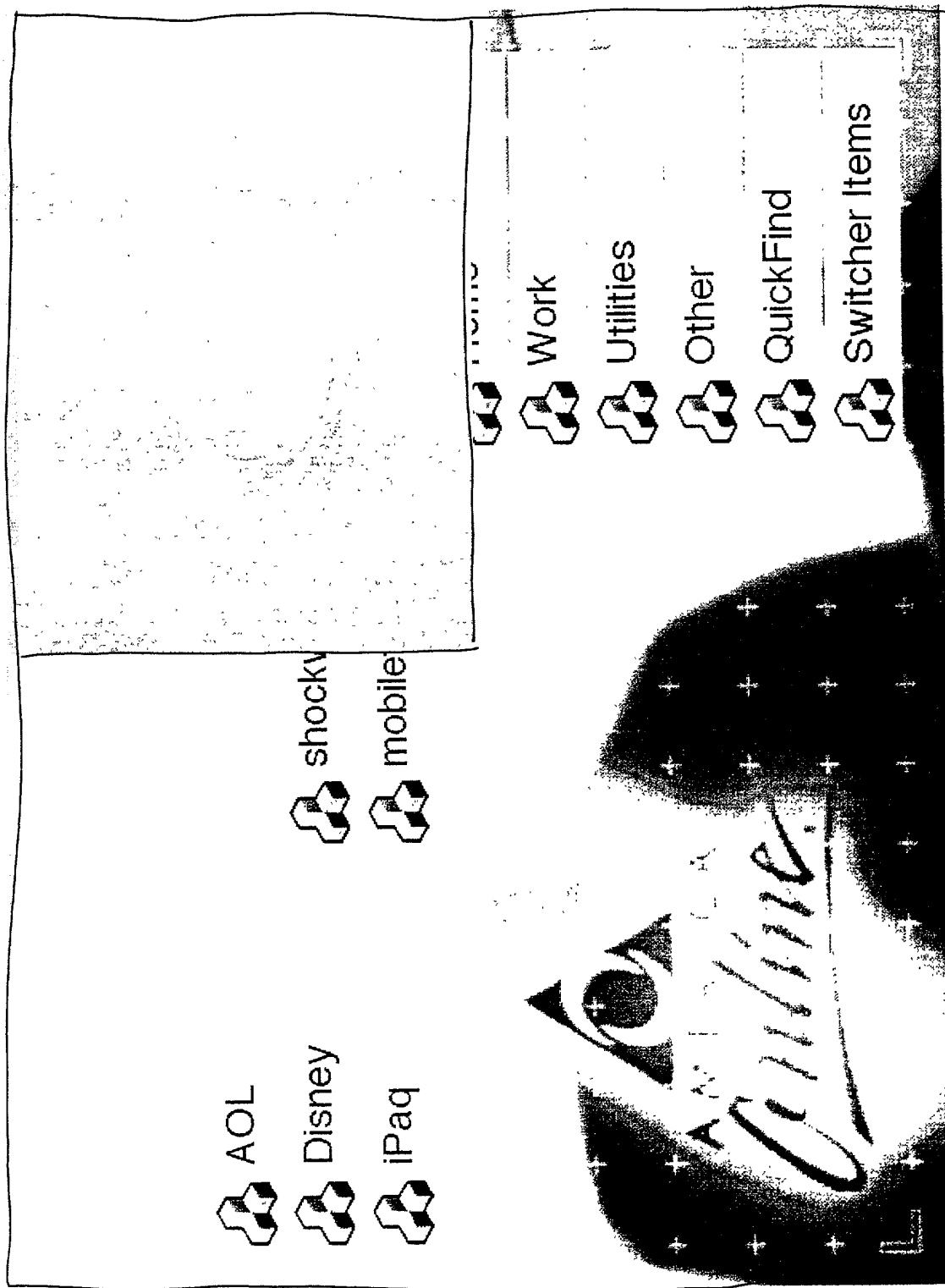


Fig 14C

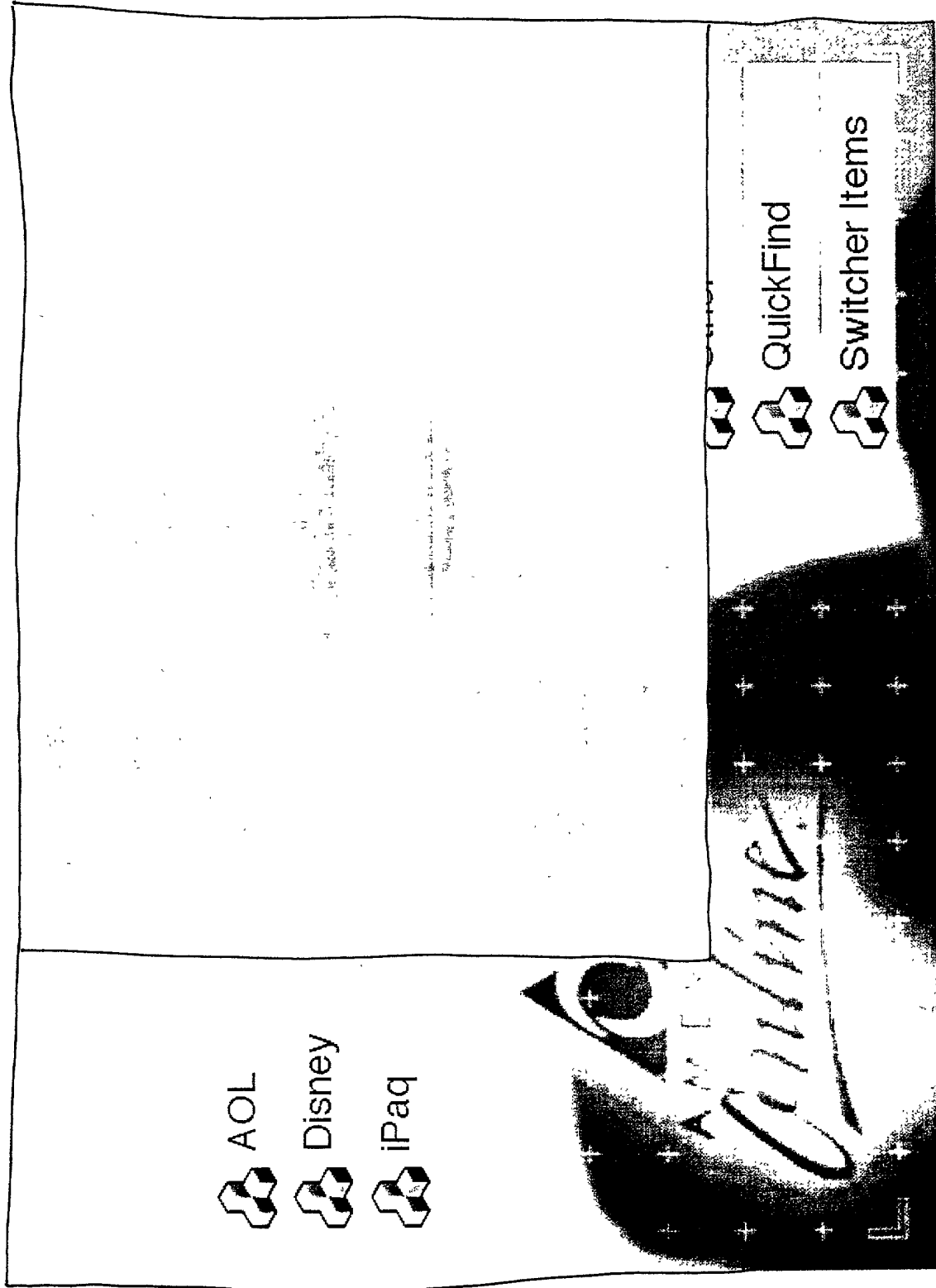


Fig 14D

2025-03-24-0000

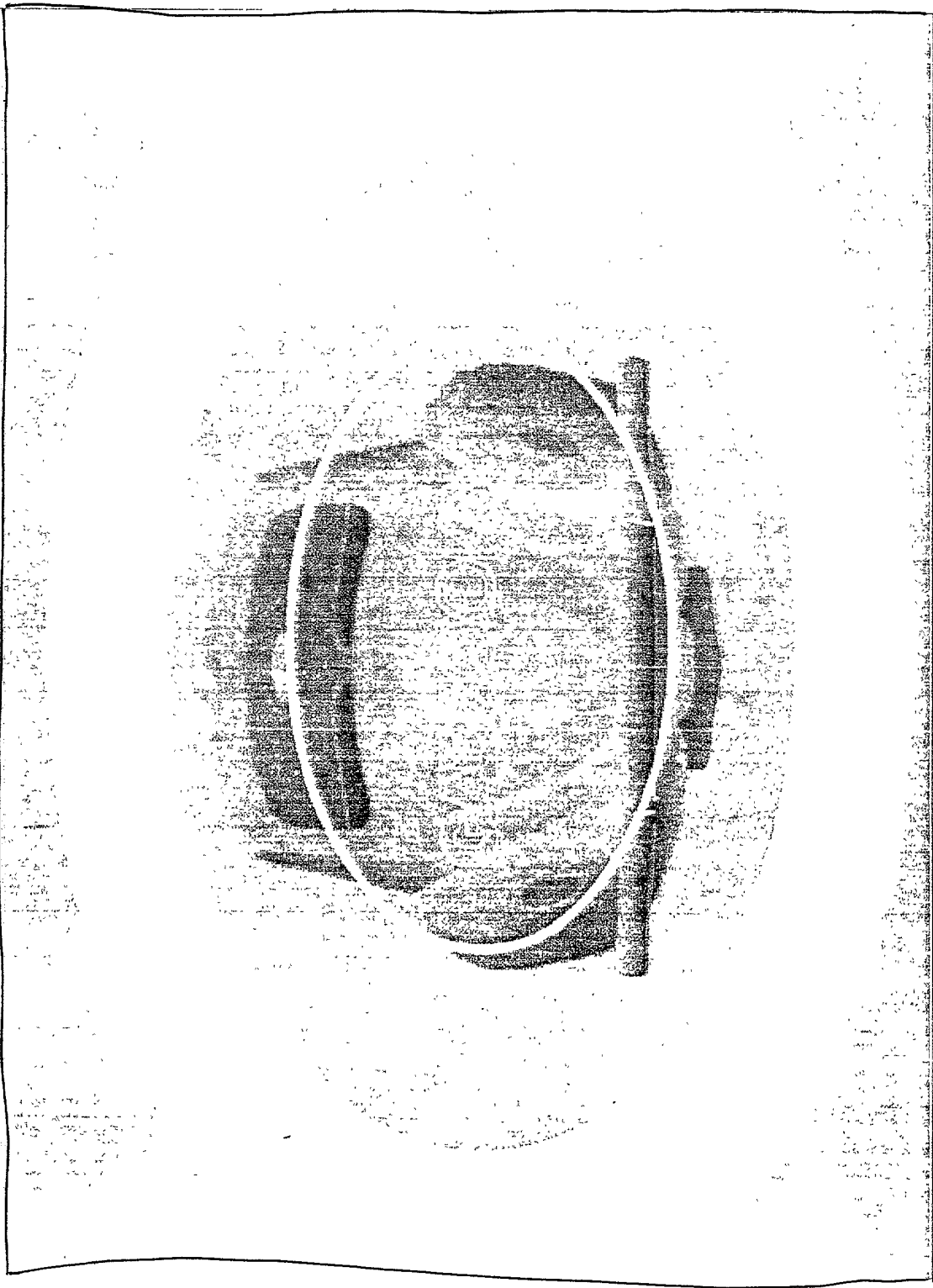


Fig 14E





1860

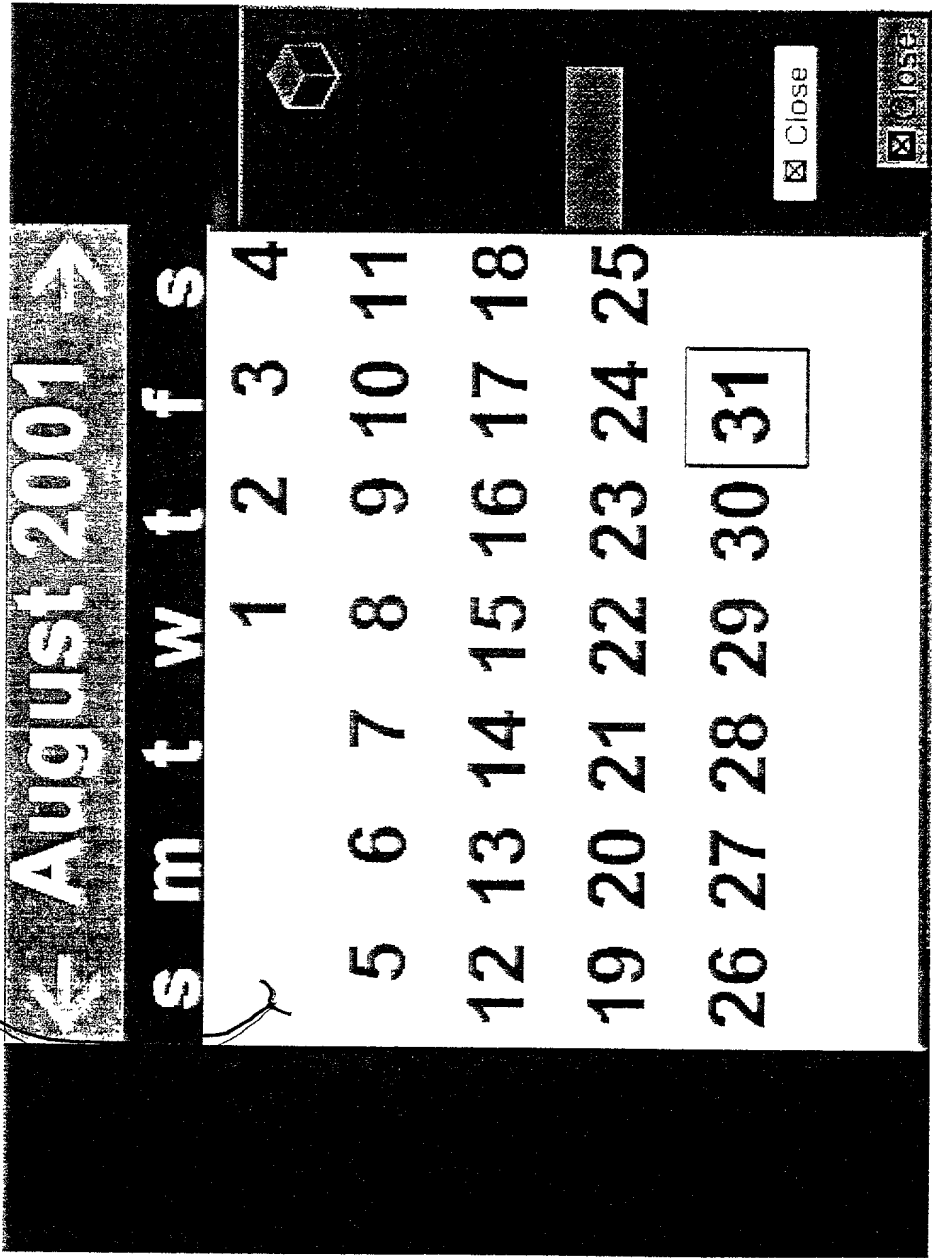


Fig 16

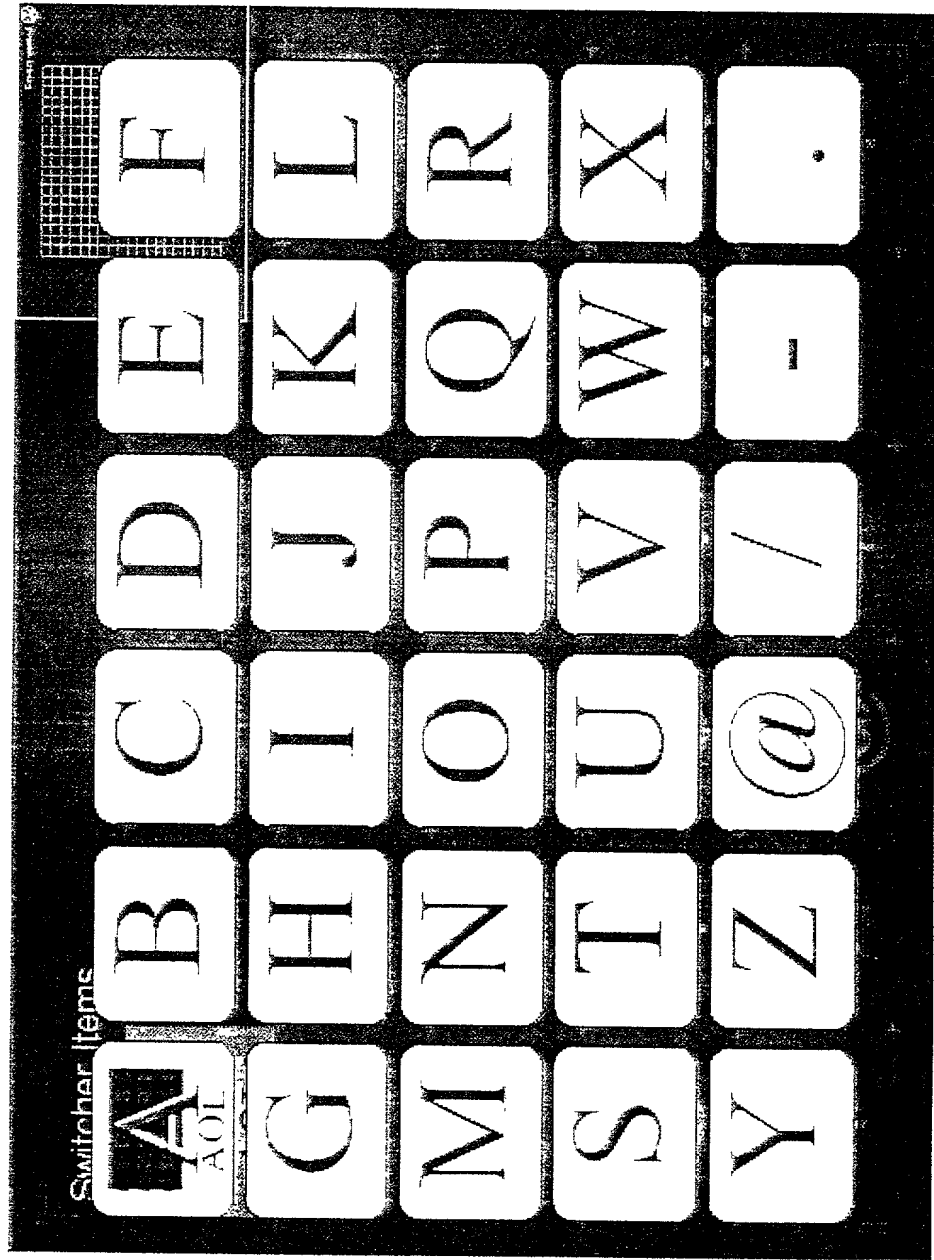


Fig. 17A

TECHNOLOGY

More inspiring and beautiful still at 256k

16 for a long low built in low for 16

Colours by 16M - looking for 16M

For 16M looking for 16M

Switch

Q W E R T Y U I O P

A S D F G H J K L

Z X C V B N M

Space

Fig 17B

[illegible]

Fig 17C

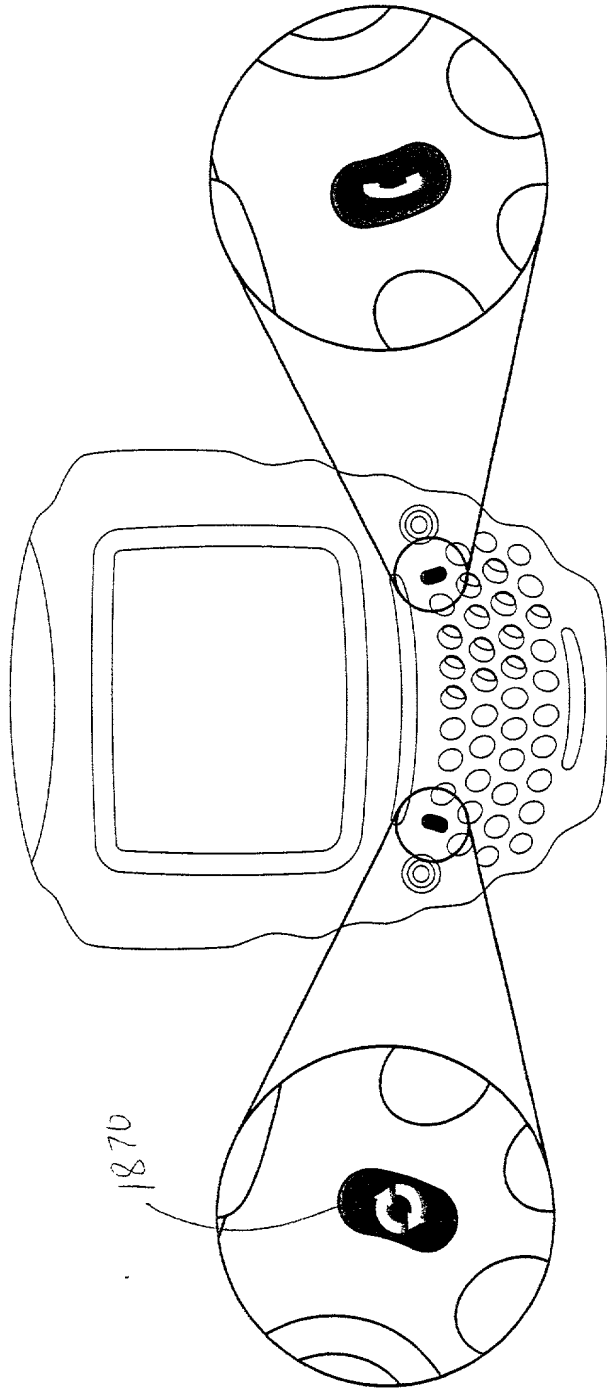


Fig 17D

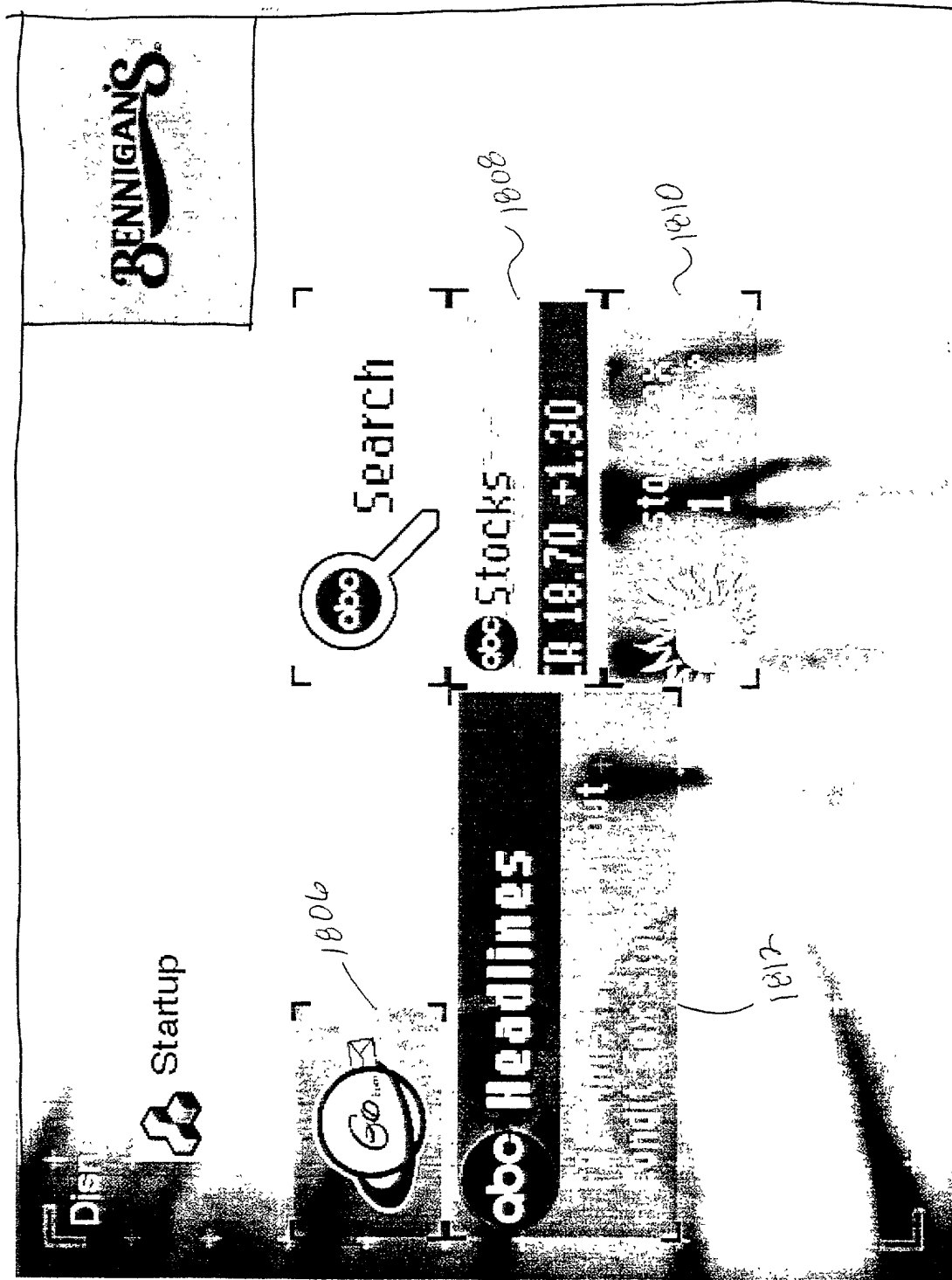


Fig. 18A

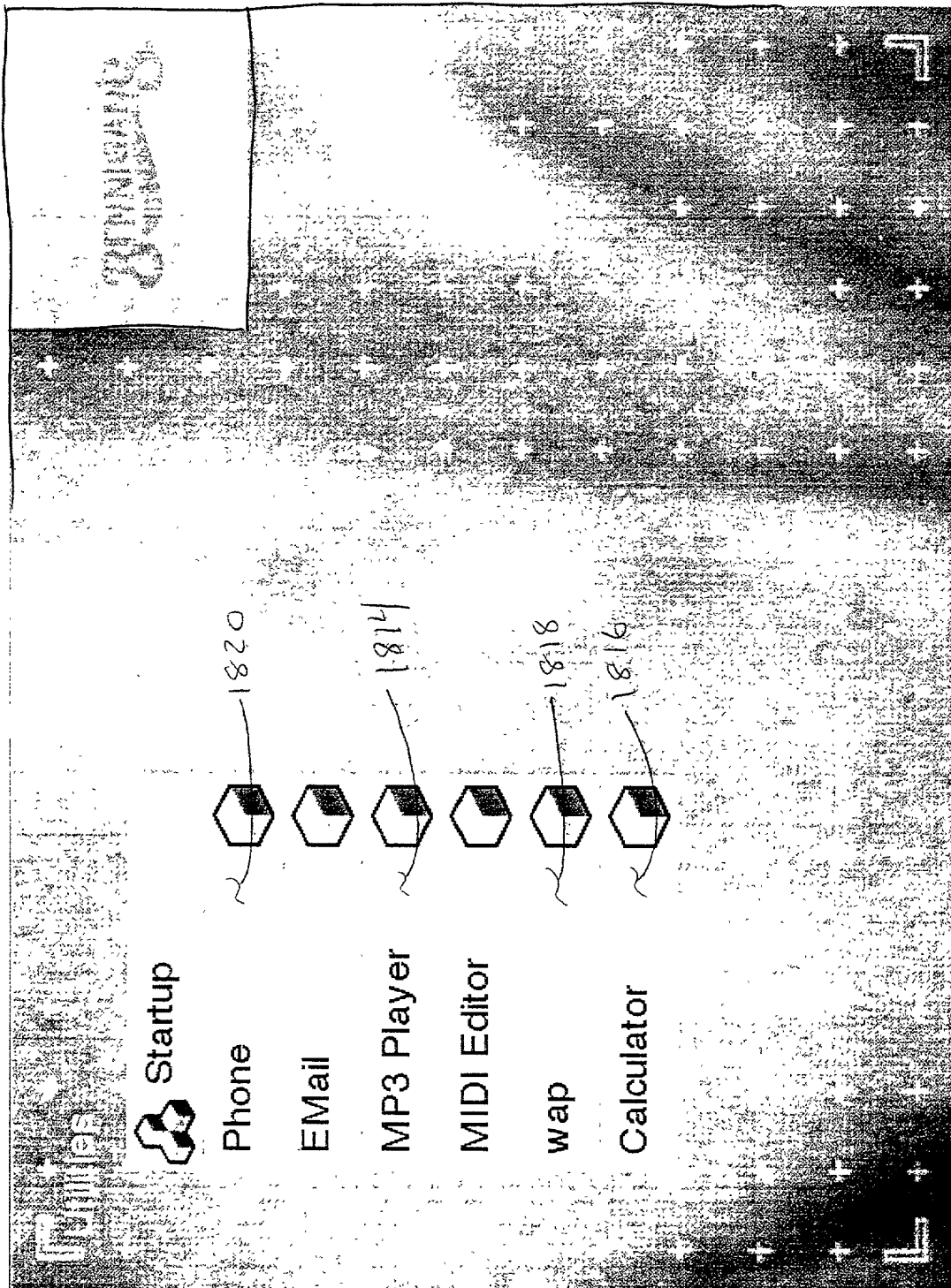


Fig 18B



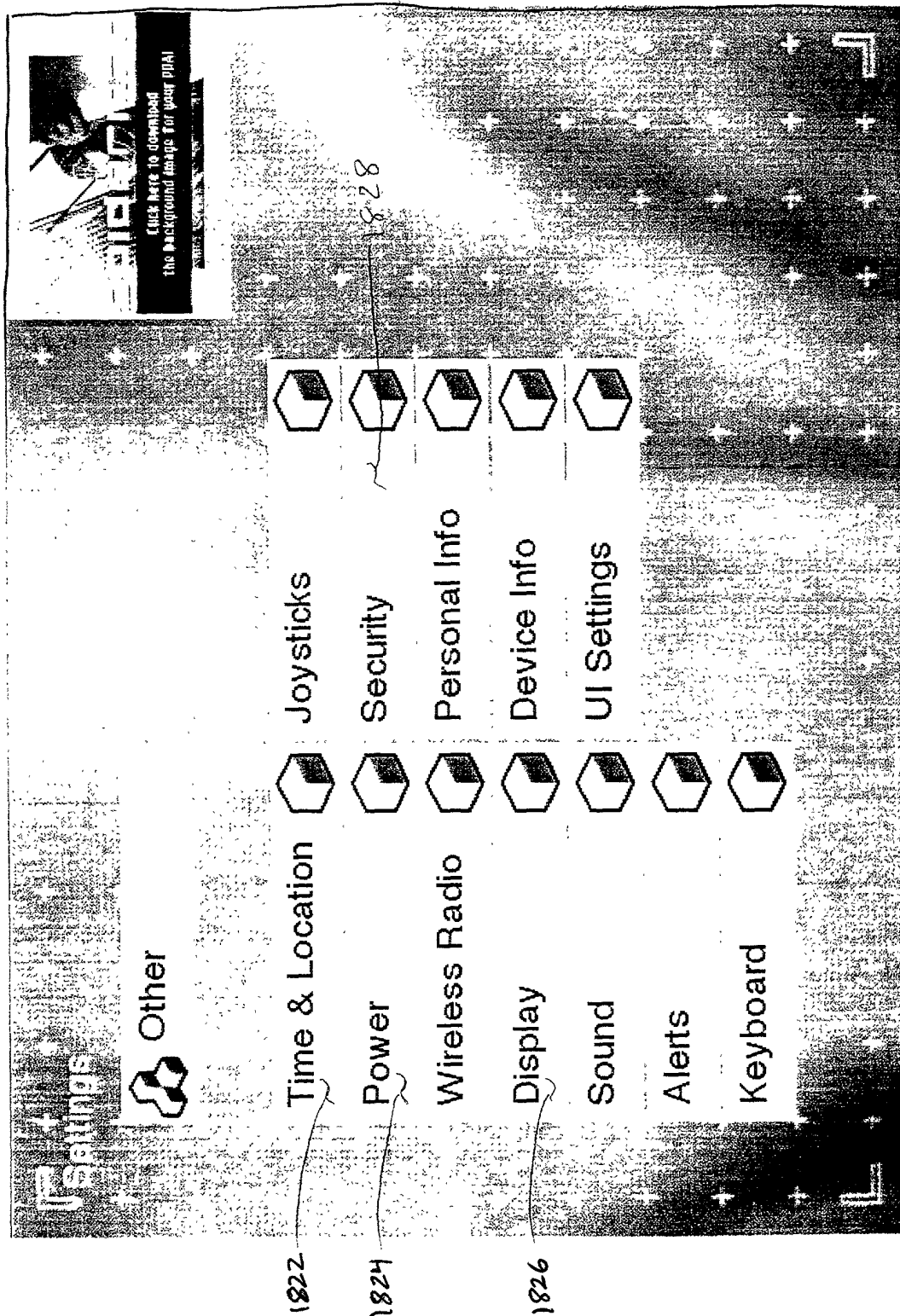


Fig 18c

1802

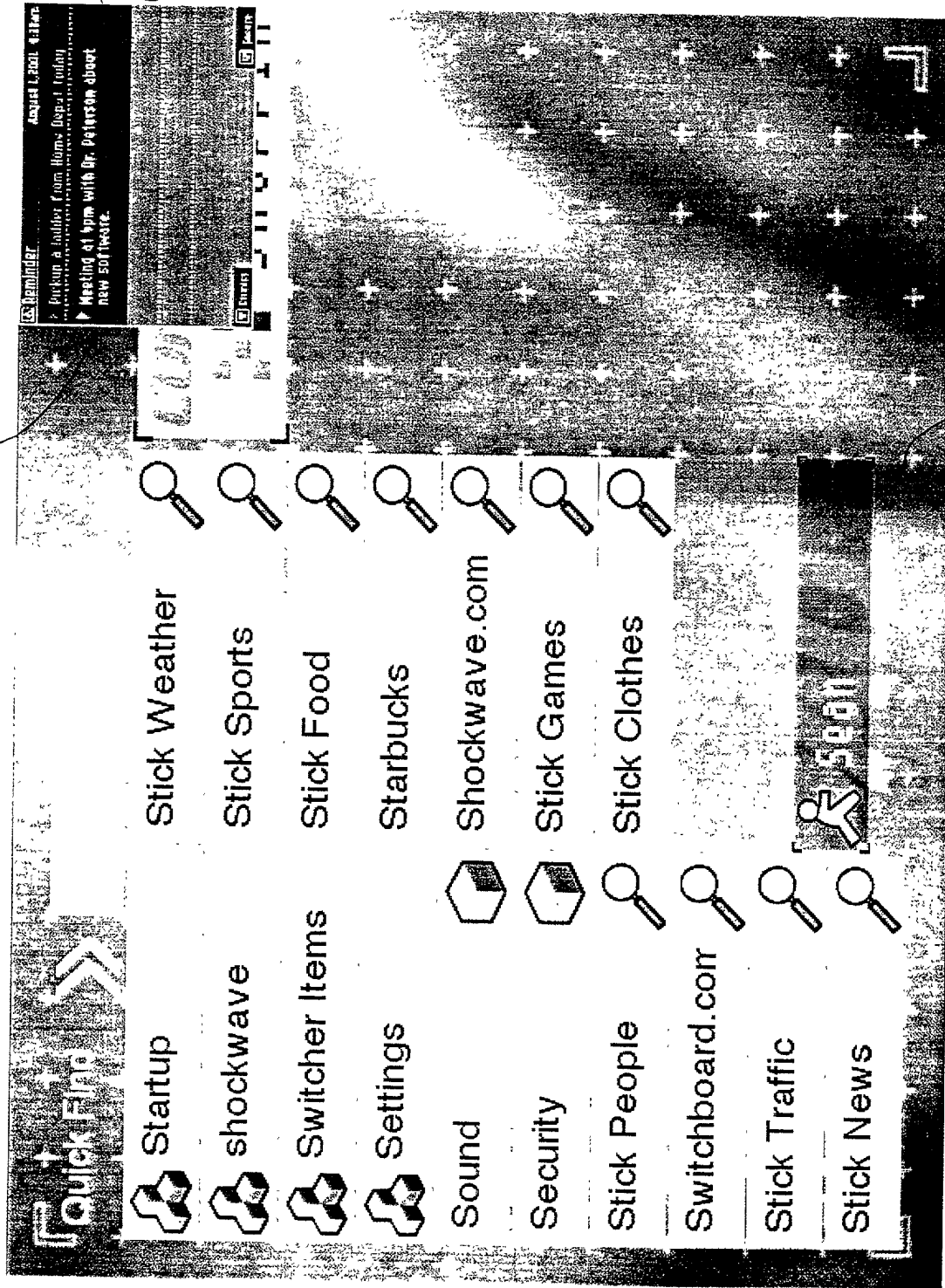


Fig 18 D

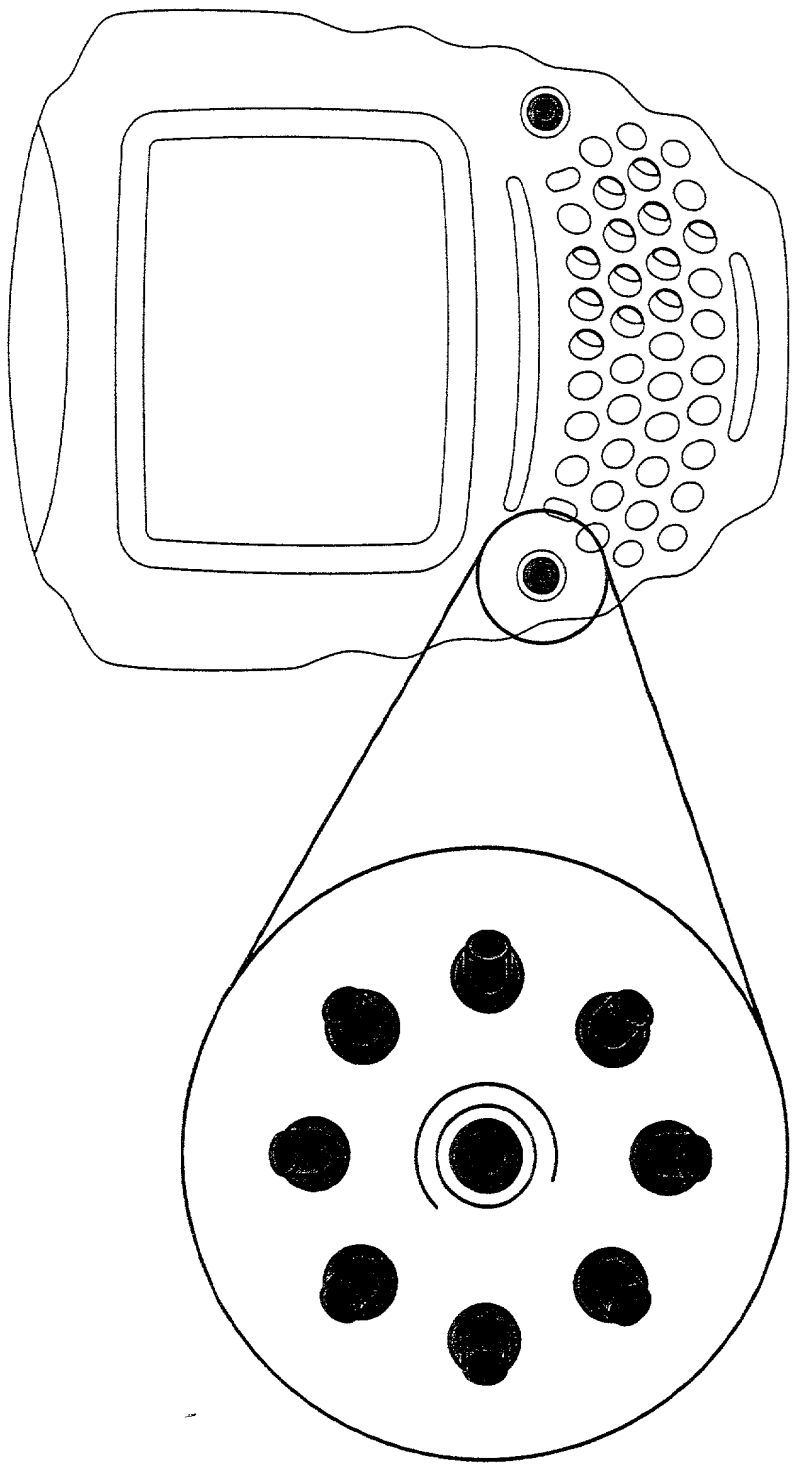


Fig. 19